

and Meches are relatively immune to fever. The infantile mortality is very high; in the Duārs the children suffer to such an extent that it must be considered normal for a child to have repeated attacks of fever. The existence of a sturdy people in such a deadly region can only be explained on the principle of the survival of the fittest; those who have not died in the process have acquired immunity by repeated infections in childhood. The immunity is probably limited to the variety of parasite with which the individual has been infected, but, as his chances of getting, at one time or another, all the varieties of parasite are so great, he is very well protected.

The greatest mortality is caused by fevers, the death rate from which was 31.94 per 1 000 in 1907 out of a total death rate of 34.33 per 1 000. Malaria is prevalent all the year round, but is most intense during and after the rains. The types of malaria found in the district are simple tertian, malignant tertian, quartan fever and the deadly black-water fever. Mixed infections and double infections of the same parasite often make it difficult to recognise the variety from the temperature chart, but a careful record will usually show which variety is present. The cycle of simple tertian fever is 48 hours and the fever occurs every third day. The malignant tertian has a cycle of from 24 to 48 hours and the fever occurs every other day or more commonly daily. The quartan parasite has a cycle of 72 hours and the fever paroxysm occurs every fourth day.

PRINCIPAL
DISEASES.
Fever.

At the instance of the planters an enquiry into the occurrence of malaria and especially of black-water fever in the Western Duārs is now being made by Dr. Bentley, M.B., and Captain Christopher, I.M.S.

ENQUIRY
INTO THE
OCCURRENCE
OF MALARIA
AND BLACK-
WATER
FEVER IN
THE
WESTERN
DUARS

The following account of the fevers of the Western Duārs and of the results of the investigation, so far as it has gone, has been kindly written by Dr. Bentley for this volume. — 'Since the British occupation of the Duārs this tract has shared with the Darjeeling Terai the reputation of being one of the most intensely malarious regions in India; but it was not until the visit of the Royal Society's Malaria Commission in 1901 that anything really definite was known as to the actual incidence of malarial disease in this part of the country. The investigations conducted on this occasion by Drs. Stephens and Christophers and Captain S. P. James, I.M.S., showed that the malarial endemicity of the Duārs was extraordinarily high and that black-water fever was as common in that locality as in any region of Africa visited by the Commission. Until quite recently no further investigation into the conditions relating to malaria in this area was undertaken, but in 1907 the Duārs Planters' Association, alarmed by the apparently increasing unhealthiness of the district, made an urgent appeal to the Indian Government, with the result that an enquiry was instituted into the occurrence of

malaria and black-water fever, and the general condition of sanitation in the Duāra.

‘It is impossible here to refer, except in a very general manner, to the conclusions arrived at as a result of the present enquiry, of which only a partial report has as yet been published, and before doing so it is necessary to indicate briefly the state of our present knowledge regarding malaria. Since Laveran’s discovery of the malarial parasite and Ross’ brilliant demonstration of the transmission of malaria by mosquitoes, it has been recognised that malarial disease is invariably associated with the presence of minute animal parasites in the blood of infected persons, and that the spread of malaria in any locality is dependent upon (1) the presence of infected persons; (2) the presence of other susceptible persons; and (3) the presence of susceptible mosquitoes, i.e., of certain species of anopheles, capable of contracting malarial infection from infected persons and of transmitting it by their bite to other susceptible people. Three distinct species of the malarial parasite are recognised, quartan, simple tertian, and malignant tertian, and the infection of a human subject by any one of these parasites is followed by the occurrence of certain well known symptoms. Quartan and simple tertian malaria are characterised by recurring attacks of ague and fever followed by enlargement of the spleen, and in severe cases by great debility, anæmia and dropsy. Malignant tertian malaria is frequently the cause of fever of a bilious and remittant type and may produce very fatal attacks. Mild injections by either form of parasite may occasion attacks of so-called “masked malaria,” with undefined symptoms of general malaise, headache, biliousness, indigestion, etc., conditions which are almost invariably spoken of as “low fever,” “a touch of the sun” or a “go of liver.” Malarious infections are exceedingly difficult to eradicate except by systematic quinine treatment extending over many months, and during their course, whenever the subject is exposed to any kind of depressing influence, relapses of febrile or other symptoms are very liable to occur.

‘In the absence of infected persons and of susceptible anopheles mosquitoes, malaria does not arise and the so-called “jungle fever,” which were at one time supposed to be contracted in uninhabited swamps or virgin forests, have been found on investigation to be either severe relapses of malaria in infected persons exposed to the hardships of camp life, or to have been primary infections contracted in the neighbourhood of native huts or from native servants. As the incubation period of malaria varies from one to three weeks, it is easy to understand that mistakes may be made by persons ignorant of this fact. Now although much that is known regarding malaria serves to show its relation to geographical situation, climate, rainfall, etc., it does not explain all the facts which have been observed from time to time. The reason for this is not far to seek, and it is to be hoped that one result of

the present enquiry will be the recognition of the overwhelming importance of certain factors influencing the prevalence of malaria, which have hitherto been entirely overlooked. The absolute failure to demonstrate the presence of the malaria parasite except within the bodies of infected human beings and of susceptible mosquitoes found in immediate association with them; and the experimental proof that these mosquitoes can be infected from man and that man again may be infected by the bite of such germ-laden mosquitoes, appears to show that the existence of this parasite is confined to the human and the insect host, every year the evidence in support of this hypothesis becomes more and more convincing.

This being so, in the investigation of the epidemiology of malarial disease two lines of enquiry naturally suggest themselves:—on the one hand the most minute and careful study of the human host, together with every circumstance relating to his racial, social or economic condition, his movements, his aggregation into communities industrial and otherwise, and everything which may influence in the smallest degree individual or collective susceptibility to malaria; on the other hand there is the study of the insect host, the anopheles mosquito, its natural history and everything about it which may throw light upon its relation to malaria. Though much attention has been paid since Ross' discovery to the study of mosquitoes in general and the anopheline in particular, with the result that an enormous amount of information has been collected about this side of the question, the significance of the human factor in the problem of malarial dissemination has never been recognised. The importance of this neglected factor may be demonstrated by a careful review of many facts relating to the character, movements and general condition of populations in malarious districts, while its recognition will prove the means of elucidating many obscure points in the epidemiology of malaria.

Among Europeans, of whom over 200 reside in the Duars, the incidence of malaria is very high. Visitors to the district, no matter what the season, usually suffer from the disease from one to three weeks after their arrival. Residents of only a year or so and those recently returned from furlough are prone to repeated attacks of fever, while those of longer standing are extraordinarily subject to liver, biliousness and dyspepsia, the frequent signs of masked malaria. It is not surprising, therefore, that the invaliding and death rates among Europeans in the Duars are abnormally high; the mortality among this community which consists almost entirely of strong adults in their prime, ranging from 20 to over 75 per 1,000, as compared with a death rate of 7 per 1,000 for the whole of the European population of India. The high malarial incidence and the resulting sickness and mortality is not due merely to accident or chance, but is the direct

Lines of
investigation

Malaria in
the Duars

outcome of the extraordinary prevalence of malarial infection among the general native population of the Duars. The European in the tropics invariably contracts malaria from the natives who live in his immediate neighbourhood, and the closer this proximity, the larger their number and the more prevalent the disease among them, the more certain is he to suffer from the results of constantly repeated infection. Obviously then, in order to get a true insight into the epidemiology of malaria in any region, it is necessary to make a most careful study of the disease as it affects the general population. The present investigation, which has been carried on since July 1907, has shown that the commonly held opinion regarding the extreme unhealthiness of the Duars is well founded. So far the enquiry has been confined mainly to the tea-gardens, which find employment for more than 150,000 persons and probably support a much greater total population. Among these people, malaria is present to an extraordinary degree.

Endemic
index of
Malaria

'It has been known for many years that new-comers to a malarious district are specially liable to contract the infection, while older residents acquire a relative immunity. Koch, investigating malaria in New Guinea, described certain villages in which, while the young children showed almost universal infection, the adults appeared to be entirely exempt. These villages were generally far removed from the lines of communication and invariably possessed fixed populations. Other villages, so situated in relation to main roads, markets, navigable streams, or harbours that everything tended to encourage movement in the population and ensured the frequent influx of new residents, while possessing a similar amount of infection among the young children, also showed an extraordinary prevalence of malaria among the adult population. This prevalence was due to the floating character of the population and to the constant introduction into the endemic area of large numbers of non-immunes. From these observations Koch inferred that the prevalence of malaria in any locality bore a direct relation to the population of new arrivals or non-immunes among the population. Stephens and Christophers working in Africa confirmed and extended Koch's observations and adopted as the measure of the comparative malariousness of a place the percentage of infected children, these being *ipso facto* "new-comers." The figure arrived at they termed the endemic index of malaria. The examination of the blood of young children in the Duars has shown the endemic index to be very high, rarely falling below 50, in many instances approaching 100, and in general averaging about 80. This fact, besides showing the widespread prevalence of malaria, also indicates the extent to which all new-comers to the Duars must suffer. Were the population a fixed one, we should probably find that malaria was chiefly confined to the young, causing perhaps a heavy child mortality and checking the natural increase of the population, but affecting the adults slightly. We

have evidences of such a condition in the case of the Meches and other natives born in this part of the country.

But unfortunately the tea-garden population in the Duārs is almost entirely an immigrant one, recruited every year from Chota Nāgpur, the Santāl Parganas and the Darjeeling hills, by thousands of new coolies, the majority of whom show little evidence of malaria on their arrival. Thus yearly influx of new-comers adds enormously to the non-immune population and acts as fresh and exceedingly inflammable material heaped upon an already glowing fire. There is probably no malarious region in India of like area in which this condition is to be met with on anything approaching the same scale, and it must also be remembered that in the Duārs this large influx of non-immunes is not a temporary but a continuous yearly phenomenon, dating back some thirty years and due almost entirely to the extension of the tea industry. It is not an instance of true colonisation such as may be seen elsewhere, but an example of the persistence over a wide area and to an extraordinary degree of an artificial condition of influx in the population, which is, except in the case of large cities (which are little affected by malaria), usually only temporary. Of the people who pour into the tea-gardens every year, only a small portion become permanently settled on them, the vast population being content to migrate from place to place every year or so backwards and forwards through the district; some go out into the villages and a considerable number eventually return to their own country. In the absence then of large settled garden populations, we have in the tea-garden area of the Duārs an instance of a wide tract of country dotted over with innumerable labour camps. It is difficult to emphasize sufficiently the full significance of this phenomenon and its tremendous importance with regard to the problem of malaria in the Duārs, for in the absence of accurate data its effects cannot be easily estimated. The holocausts among the immigrant employes at Panama, which caused the failure of the French canal scheme, serve to indicate the results which always follow the careless importation and aggregation of large non-immune populations within the malarious zone. To precisely similar causes, *viz.*, the recruitment and aggregation of numerous coolie labourers without due precautions upon the sugar plantations of Mauritius, may be traced the frightful outbreak of malaria which swept that once salubrious island from end to end some forty years ago. But though the introduction of large numbers of non-immunes into a malarious district and their collection into labour camps is always risky, it is not necessarily the cause of widespread and intense malaria, provided everything is done to guard against the danger, as the recent experience of the Americans at Panama conclusively demonstrates. The immigration of non-immunes is therefore not the sole factor of importance which may exalt the malarial endemicity of a district; it is rather this in conjunction with other circumstances almost

The tea-garden population.

invariably found in association with it and always to be met with in new countries, where large commercial or industrial undertakings involving the bringing together and employing of numerous labourers, are organised and conducted without due recognition of the most elementary rules of hygiene and sanitation.

Malaria
and soil
disturbance

'In the tropics wherever huge engineering works or the establishment of some important industry have been undertaken, involving extensive soil disturbance, we nearly always encounter the conditions referred to, and herein lies the true explanation of the countless observations showing that opening of the soil will lead to outbreaks of malaria, for, in reading the description of such outbreaks, it will invariably be found that they occurred during the course of railway, road or canal construction or extensive building operations necessitating the employment of considerable numbers of labourers. The explanation, current a generation ago and still held by the uneducated, suggested a hypothetical emanation from the soil as the cause of these outbreaks, but more recently it has been supposed that the multiplication of puddles in the course of excavation led to an enormous increase in the breeding grounds of the anopheles mosquito and hence to the spread of malaria in epidemic form. That such a condition may be an accessory cause is probable, but considered alone it forms a hopelessly inadequate conception. For what may be expected in a malarious country when large and mixed populations of workers are massed together under the temporary conditions inseparable from camp life? The special liability to disease in epidemic form incurred by armies in the field and concourses of pilgrims has long been recognised, and precisely similar dangers are encountered wherever the industrial aggregation of labour under primitive conditions is met with. And so throughout the Duārs, as a direct result of its numerous labour camps, with their shifting population of mixed character, we find a prevalence and exalted intensity of malarial infection only met with in epidemic manifestations of the disease. It is the existence of the conditions indicated and their inevitable consequences which serve to mark off the Duārs as different from other tracts apparently but little dissimilar in physical outline, rainfall, climate and geographical situation.

Black-water
fever.

'Among disease conditions resulting from the universal intensity of malaria throughout the Duārs, none is more striking than black-water fever, which is exceedingly common both among Europeans and educated natives. It was the frequent occurrence of this disease, causing a heavy mortality and much invaliding among the planters, which led to the appeal for an investigation of which the present enquiry is the result. Black-water fever appears to be mainly confined to Europeans, Bengali Babus and tradesmen, Chinamen, dhobies, and servants drawn from the town-dwelling classes of Bengal. New-comers are never attacked and it is rare for the disease to appear in residents of less than six

months' standing. The second and third years of residence in the Duars is the most dangerous period, the majority of cases occurring then. After four or five years of unbroken residence in one place, the liability to the disease is much reduced, but a change of situation or long leave to a healthy climate annuls this acquired immunity, while one attack of the disease exercises a markedly predisposing effect so that recurrences are not uncommon. The actual mortality is about 10 per cent of all cases, but is generally greater among Europeans than among natives. The onset of the disease is frequently mistaken for an ordinary malarial attack which it at first resembles. There is usually a sharp chill like severe ague, but this is quickly followed by the passage of dark brown, blackish or bloody urine, and generally by repeated and persistent bilious vomiting; the temperature rises rapidly, pain at the pit of the stomach may be complained of and jaundice soon becomes evident. Such an attack may last from twelve hours to four or five days and relapses are not uncommon. In favourable cases the first sign of improvement is the clearing of the urine, the jaundice and the fever usually persisting longer than the hæmoglobinuria. In fatal cases the patient may die from heart failure while still passing large amounts of dark urine, but more frequently the urine becomes more and more scanty in amount until suppression supervenes and causes death. The diagnosis of the disease is easy in typical cases, but many mild attacks escape recognition especially among natives, and in some parts of India even fatal cases are still mistaken for malignant jaundice or are termed "fever and jaundice," the name by which the disease was known in the Duars before its real nature was recognised. The only certain method of diagnosis in doubtful cases is the spectroscopic examination of the urine supplemented by the use of the microscope. The essential nature of the disease is a blood destruction so enormous that the red corpuscles are reduced to one-half or even one-tenth of the normal within two or three days. This destruction is due to the sudden solution of the red blood corpuscles in the blood plasma, their colouring matter, hæmoglobin, being excreted from the kidneys, thus causing the peculiar colour of the urine which has given to the disease its name of black-water fever. Malarial parasites are generally present in the blood at the time of onset, but rapidly disappear in the course of the disease although other evidences of malaria are as a rule present or may be found post mortem.

At present the most successful treatment is the free use of bland diluents, such as barley water or milk and soda. Drugs are of little service and meat extracts are distinctly harmful in the acute stage, but in cases of exceptional weakness they may be necessary after the hæmoglobinuria has ceased. It seems probable that further experiments may lead to the discovery of a specific serum or anti-toxin treatment.

Nature of
black-water
fever.

'The present investigation' has shown that black-water fever is the result of constant and repeated inoculations of malaria, a danger to which all residents in the Duars are daily exposed. Owing to the cumulative effects of constant and repeated infection, the constituents of a peculiar and complex blood poison are produced within the body and a condition of unstable equilibrium ensues. When this state of things has been induced, the action of a chill, over-fatigue, a superadded attack of malaria, or even a dose of quinine may cause the sudden combination of the elements, which together form the blood poison referred to, and the immediate result is the dissolution of the red blood corpuscles with the occurrence of the symptoms characteristic of black-water fever; but, though the condition has a malarial origin, it must not be confused with a severe malarial attack, from which it is as distinct as an attack of delirium tremens is distinct from mere intoxication.

Prophylaxis.

'From what has been said, it is evident that the methods to be adopted for the prevention of malaria and black-water fever are essentially the same, and among prophylactic measures education stands pre-eminent. The interest, aroused throughout the Duars by the present enquiry, has led to a remarkable dissemination of knowledge regarding malaria among the European residents and this has resulted in the very general adoption of precautions against the disease. Since 1907 some 75 per cent of the Europeans in the Duars have made use of systematic quinine prophylaxis in the form of a 5-grain quinine tablet taken daily. In addition far greater care has been exercised in the use of mosquito nets and a large proportion of the bungalows have been furnished with galvanised wire mosquito screens to the doors and windows or verandahs. Coincidentally with this the general health of the European community has shown a remarkable improvement; there have been far fewer cases of fever, less serious illness, and only two cases of black-water fever. No case of black-water fever occurred among those who had adopted the precautions described. As regards prophylaxis among the general population, it is premature in the absence of any organised campaign to do more than refer to the fact that, in a number of instances, planters have begun to distribute quinine in palatable form freely among the coolies. In some cases the consumption of this valuable remedy, previously used in hopelessly inadequate amounts, has increased ten-fold. This is undoubtedly a move in the right direction, but, at the present time, there are no figures available to show the actual results attained, and it is obvious that, without proper organisation both for the carrying out of an anti-malarial campaign and for the collection of exact data, any estimate of the benefit which may be derived from the adoption in the Duars of this, or any other method of malaria prevention must be largely a matter of guess work.'

From what has been written above it will be seen that the only drug of use in a malarial attack or for the prevention of malaria is quinine. So far all the attempts made by Government to popularise it have failed, though it has been sold at a loss, centres of distribution have been established at the head-quarters of every district, and clerks have been paid for the extra work involved. If the article sold had been chocolate or cigarettes, the sales would have been enormous, but as quinine is an extremely unpalatable drug, it will remain unpopular until it is sold in an attractive form. The most likely method of making quinine popular is to sell it in the shape of sugar-coated pills or tablets for adults and older children and of tannate in chocolate or powder form for younger children. The District Board of Julpāiuni has recently (1908) ordered 100,000 sugar-coated pills for free distribution in the most malarious areas in order to induce the villagers to take the drug more often.

DISTRIBUTION OF QUININE.

Odd cases of cholera occur throughout the year, and it is probable that many streams and wells contain the germ of the disease, though it is only when the winter rains have been short and streams and wells are in consequence much reduced or dried up that cholera becomes epidemic. The gradual warming of the water in March, April and May seems to favour germination and, coupled with a greatly diminished water-supply, the necessary factors are complete. Cholera does not rank high in the returns as a cause of death, but the mortality from the disease in particular areas is often great, in 1906, which was a bad year, it was responsible for 2.36 per cent of the total mortality of the district. The worst affected tracts are the *tahsils* of Fālākārā and Alipur and the reason for this seems to be the presence of a considerable Mecha population. The majority of the Mechas of the district are found in these *tahsils* and, owing to their nomadic habits, cholera, when it breaks out, spreads rapidly. They do not bury their corpses like other races, but throw them into the nearest stream and flee to the forests, polluting the streams with bodies as they go. The result is that the streams outside the forests get infected and the residents in settled tracts, dependent on streams for their water, cannot escape infection.

Cholera

Spleen and goitre are common diseases and the proportion of persons suffering from insanity and deaf-mutism is higher than in most parts of Bengal.

OTHER DISEASES.

VACCINATION.

The table given in the margin shows the number of persons

Year.	SUCCESSFUL VACCINATION		Total.	Ratio of success
	Primary.	Secondary		
1903-04 ...	25,208	262	25,470	32 34
1904-05 ...	22,838	449	23,287	29 57
1905-06 ..	27,440	244	27,684	35 15
1906-07 ..	23,570	167	23,737	30 14
1907-08	27,008	1,240	28,248	35 87

successfully vaccinated during each of the last five years and the ratio of success per mille of the population. There has been a marked improvement in the numbers of persons pro-

tected against small-pox.

The average ratio per mille of the population for the ten years from 1892-93 to 1901-02 was 26.92 while for the five years shown in the table it was 32.60. On the whole, there is less prejudice against vaccination in the Jalpaiguri district than in many other parts of Bengal.

MEDICAL
INSTITU-
TIONS.
The
Jalpaiguri
Hospital.

The chief medical institution in the district is the hospital at Jalpaiguri. The present building is a fine masonry structure, completed in 1905, in place of the old hospital which was gloomy and unhealthy. It is much appreciated by the people as is shown by the number of in-door patients who have attended it for treatment. In the ten years from 1895 to 1904 the average daily number of in-patients was 9.12; in 1905 the year in which the new hospital was opened, it rose to 10.60; in 1906 it increased to 17.83 and in 1907 it was 23.98. The wards are always full, and as soon as a bed is vacated, it is occupied by a new patient. The total number of in-door patients treated in 1907 was 758 and of out-door patients 9,215. The Commissioners of the Jalpaiguri Municipality are proud of their hospital and make a large grant every year for its maintenance; the District Board gives Rs 1,200 a year and the rest of the expenditure is met from private subscriptions. It has been arranged to build two sets of two rooms each for the accommodation of patients of the higher classes who will not go into the public wards; in one of the rooms the patient will be treated and the other will be reserved for any of his relations who wish to stay with him and look after him.

Dispensaries
in the
interior.

In the interior of the district there are charitable dispensaries at Alipur Duar, Falakata and Titilya where 7,238, 6,839 and 5,987 patients respectively were treated during 1907; these three dispensaries treat both in-door and out-door patients. Roda with 5,676, Mainaguri with 5,325 and Kumargram with 3,033 patients are out-door dispensaries. A new dispensary was opened at Pitagram in 1907, at the request of the inhabitants of the vicinity, who subscribe about one-third of the cost of maintenance; it treated 2,995 patients and had a daily average of 31.77 and will probably become an important dispensary in a few years' time. In addition to the above institutions the Maharaja of Cooch Behar maintains a well equipped dispensary at Debiganj, the head-quarters of the Chakrajat Estates.

CHAPTER V.

AGRICULTURE

It has been stated in a previous chapter that the Jalpāguri district was formed by separating the *thanas* of Jalpāguri, Rajganj and Bodā from Rangpur and uniting them to the Western Duārs. Conditions in the area separated from Rangpur differ little from those in that district and in the adjoining district of Dinājpur; the Western Duārs, on the other hand, is a submontane tract of country stretching along the foot of the hills between the Tista and Sankos rivers. The annual rainfall varies greatly in different parts of the district ranging from 70 inches at Debriganj in the Bodā pargana to 130 inches at Jalpāguri in the regulation part of the district, while in the Western Duārs, close to the hills, it exceeds 200 inches per annum. In these circumstances it is not possible to treat the district as a whole and give one account of agriculture which will apply to all parts of it.

GENERAL
CONDITIONS.

The river Tista divides the district into two parts; to the west the country is that of an ordinary plains district in North Bengal diversified only by the Bārkauthpur Forest in the north which covers an area of eighty-one square miles. The land is generally fertile and grows good crops of rice and jute; it is least productive in the neighbourhood of Amtānī Fālākānī where it is high and there is comparatively little water. The Western Duārs comprises an area of 1,968 square miles, of which 509 square miles, or more than a quarter of the whole area, are occupied by reserved forests. In the north, at the foot of the hills, lie numerous tea-gardens; so quickly has the industry grown that it is now possible to ride forty miles from garden to garden without interruption. Before the annexation of the Duārs this part of the country was covered by huge stretches of grass and reed jungle interspersed with forest and with a very scanty population; now it is the seat of a prosperous industry on which nearly a sixth of the population of the district depend for a living. Below the tea-gardens, as far south as the Cooch Behār border, lie rich fertile plains growing splendid crops of rice, jute, tobacco and mustard. Towards the east, there is still much waste land, but at the present rate of progress, it will not be long before this is brought under cultivation.

Tea is the most valuable crop grown in the district, but as its manufacture is a special industry carried on mainly by European planters, it will be more convenient to give an account of it in a subsequent chapter. This chapter will, therefore, contain only an account of native agriculture.

AGRICUL-
TURAL POPU-
LATION AND
STATISTICS
OF AGRICUL-
TURE.

More than 700,000 persons or over 89 per cent of the population are supported by agriculture, a larger proportion than in any district in Bengal (before the partition) except the Chittagong Hill Tracts. Figures for the year 1907-08 are given in the margin. The most striking features of recent years are the spread of cultivation in the Western Duārs and the increase in the area under jute, in some parts of the district at the

	Sq miles
Total area of the district	... 2,961
Forests	... 509
Not available for cultivation	... 385
Cultivable waste other than fallow	616
Current fallow	... 42
Net area cropped during the year	... 1,409

expense of the *aus* rice crop. In 1906-07 the price of jute ruled very high and in the following year cultivators grew large quantities of it; prices, however, fell and they did not make as much profit as they had expected to do. This year there has been a tendency to restrict the area under jute and grow more rice; the people say that it is little use getting high prices for jute if they have to spend the money afterwards in buying rice for their own consumption.

The alluvial soil with which the greater part of the district is covered is very fertile; west of the Tista a superior variety of jute, known as *Rājganja*, is grown; fine rice and sugar-cane are also produced. In the low lands throughout the Western Duārs coarse rice and jute grow abundantly and between the Tista and Torsa rivers very fine crops of tobacco are produced.

Irrigation.

Artificial irrigation is not infrequent in the Western Duārs where the number of rivers and streams afford great facilities for it. It is used for land on which *āman* rice is grown, but which is not sufficiently low to ensure an adequate supply of water by ordinary means. The cultivators cut small irrigation channels, locally called *jampois*, from any stream which seems suitable and their proceedings need careful watching as the rivers in the Duārs frequently change their courses and it does not require much to divert the whole of the water from a river or stream down an irrigation channel. Cases have occurred in which the digging of irrigation channels has resulted in great damage to the Bengal Duārs Railway and to roads. An irrigation channel near *Gāirkatā* had to be closed up because it threatened to divert the course of the *Angrabāshā* river and leave the *Gāirkatā* tea-garden, with its turbine driven machinery, and the *Gāirkatā* market without any water-supply. Irrigation is doubtless necessary in parts of the Western Duārs, but it is not safe to allow channels to be dug without supervision; the cultivators think only of the benefit of getting water for their fields and are not intelligent enough to foresee the result of what they do.

Extension of
Cultivation.

In the permanently settled *parganas* of the district most of the available land is under cultivation and there is not much room for extension; a very large area is, however, capable of growing two

crops if the people choose to sow them and in 1907-08 the area cropped more than once was 198,700 acres. In the opinion of the Manager of the Chaklajāt Estates, which belong to H. H. the Maharāja of Cooch Behār, nothing but the want of energy of the people prevents the land being double-cropped. In the Western Duārs, cultivation is extending rapidly and would extend at an even faster rate if more labour was available. In 1901-02 the area under jute was 59,800 acres and under tobacco 112,900 acres; by 1907-08 the figures had risen to 125,500 for jute and 119,400 for tobacco; most of the increase in the area under jute and nearly all in that under tobacco has taken place in the Western Duārs.

The greater part of the district is covered with alluvium ranging from pure sand to clay. Over most of the district the soil is a sandy loam, but in the basin between the Tista and Jaldhākā rivers it is hard, black, and clayey; excellent bricks and earthenware can be made in this part of the country and the land furnishes good pasture and fine crops of tobacco. In the uplands to the north of the Duārs the soil is a ferruginous clay and is particularly well suited to the growth of the tea plant. The Western Duārs contains numerous old river-beds which have been deserted by the streams which used to flow along them; near the hills they are strewn with stones and boulders, lower down they contain gravel and, in the plains, sand. These deserted river-beds are unprofitable wastes, of little use to any one.

The total area under cultivation in 1907-08 was 901,900 acres or about 50 per cent of the area of the district. Excluding tea, the principal crops are rice, jute, tobacco and mustard.

By far the largest part of the area under cultivation is under rice; the area under this crop in 1907-08 was 631,600 acres. In spite of the great increase in cultivation in the Western Duārs, the area under rice has decreased since 1901-02 when it was 637,000 acres. The decrease is entirely due to the increased area under jute.

There are two main crops of rice: the *aman* or *hārmantik* which is reaped in the winter and the *aus* or *bhadoi* which is harvested in August and September. The winter rice is much the more important crop; *bhadoi* rice is usually kept by the cultivators for their own consumption. *Aman* rice is first sown broadcast in nurseries in May and June and from about the middle of July to the middle of September is transplanted into fields which have been specially prepared for it. These fields are situated in low-lying land called *rupit* and are surrounded by small bands or ridges to retain the water. They are usually ploughed four times; the first ploughing is straight up and down the fields; after a week or ten days the second ploughing is done crossways. The other two ploughings follow at intervals of about two days. By the time these ploughings are finished the ground is worked up into soft pulpy mud and the seedlings are then

transplanted into it. The young plants are put into the ground by hand, two or three together, at intervals of from six to nine inches. Once the rice has been transplanted nothing more is done until it is ripe and ready for harvest. The average outturn of *aman* rice is about 20 maunds an acre, but some of the lands in the Western Duars yield considerably more than this.

Bhadoi rice is grown on higher land called *faringati*. Preparation of the land begins in February; it is ploughed six to eight times and then levelled. The weeds are collected and burnt, the ashes acting as manure to the soil. After this the seed is sown broadcast and the land slightly ploughed up twice and again levelled. When the young plants are about four inches high the fields are weeded and the crop thinned out with a rake. The outturn of *bhadoi* rice is less than that of *aman* and varies from sixteen to twenty maunds an acre.

Threshing is done with the aid of bullocks. After the crop has been brought in from the fields, the bundles of paddy are opened and spread in the courtyard and five or six bullocks are driven round and round over them. In three or four hours the grain separates from the straw and is carefully winnowed and cleaned. In the Sadar subdivision the straw is stored for the use of cattle, but in the east of the district grazing is so abundant that hardly any use is made of it. In the Western Duars cows are often used for threshing instead of bullocks.

Jute

The cultivation of jute has increased at a very rapid rate and the area under this crop has more than doubled in the six years between 1901-02 and 1907-08. In the regulation portion of the district the increase has been at the expense of the *bhadoi* rice crop, about 25 per cent of the land which used to grow *bhadoi* rice being now devoted to the production of jute. The greater part of the increase has, however, taken place in the Western Duars. In 1895, when Mr. Sunder submitted his settlement report, the area under jute was only 6,620 acres and the crop was confined to the Mainaguri *tahsil* and grown mainly in the neighbourhood of the Kranti outpost. It has now spread throughout the Western Duars; large areas of land are under it in the vicinity of Madari Hat, the eastern terminus of the Bengal-Duars Railway, and it is fast extending into the Alipur *tahsil*. The best variety of jute is that produced in the Rajganj police circle, but the quality of the fibre is good throughout the district.

The same class of land which is suitable for *bhadoi* rice is also used for growing jute. The land is well ploughed in March and April for about five or six days and the seed is then sown broadcast; one seer of seed is usually sufficient for a *bigha* of land but, if a field is covered with grass or weeds, two seers of seed to a *bigha* are sown. When the crop is a few inches high, the fields are cleared of jungle with a large rake, which also serves to thin out the plants. After the jute has grown to a foot or eighteen inches high, it is

again weeded by hand and is then left untouched until it is ready to cut.

By the month of August or September jute is from six to ten feet high and it is then cut and tied into bundles. After all the jute in a field has been cut, it is removed to a piece of high ground where the bundles are laid one on top of another, the leaf end of each bundle resting on the stalks of the bundle below it. The heap of bundles is covered with straw until, in about three days, the leaves dry up and can be shaken off. The plants are next taken to some shallow stagnant water and steeped for three weeks or a month, by the end of which time the bark begins to separate and the stalk and fibre become soft. The jute is then taken out of the water; the plants are broken off about two feet from the bottom and the stalks are removed. The fibre is dried in the sun and cleaned until it is fit for the market. The lower part of the jute stalks, which is broken off in order to extract the fibre, is used for fuel; the upper part is used to make fences for the protection of crops, such as tobacco and vegetables, which are grown near homesteads.

Suitable weather after jute is sown is essential to the proper growth of the crop. Prolonged fine weather causes the young plants to wither and they either die out altogether or become stunted. Too much rain after the seed is put into the ground makes it rot and the sowing has to be done over again. The only other necessity is plenty of water at the time when the jute is steeped; the heavy rainfall of the Jalpaiguri district almost always ensures this, but occasionally in the south of the district in the Bodā police circle, there is not enough water, with the result that every pool and pond is used over and over again, and the fibre becomes black and loses the silky appearance which it ought to have.

Tobacco is a very valuable crop and is grown largely in the Western Duārs, the best tobacco lands lying between the Tista and Torā rivers. The crop requires careful cultivation and much labour to bring it to perfection, the results of all the industry bestowed on it may be lost in a few minutes if hailstorms occur in January or February just before the leaves are ready for plucking. In February 1905 three-quarters of a fine crop of tobacco were destroyed by 'two nights' frost which withered the leaves.

The crop is grown on good *farangiti* land situated near the homestead of the cultivator. The land is carefully cultivated and all the available manure, consisting of cowdung and ashes, is put into it. The seed is sown in nurseries in July and August and the young plants have to be shaded carefully to protect them from the sun. Transplanting is done in October and November, the seedlings being placed in lines about two feet apart. The fields have to be kept well weeded, and the crop requires constant attention until the leaves are ready for plucking in February and March.

Tobacco

The yield of an acre of land is from six to eight maunds of tobacco and the market price ranges from six to twelve rupees a maund; the average price of good tobacco may be taken to be about eight rupees a maund.

Mustard.

The area under mustard in 1907-08 was 27,700 acres. The crop gives little trouble to the cultivator and does not require much attention. The seed is sown broadcast in October and November and the crop is reaped in February or March.

Other crops.

Among other crops may be mentioned sugar-cane which is grown chiefly near Pochagarh in the Bodā pargana, though small plots of it may be found in the Western Duārs; maize which covered 3,400 acres in 1907-08 and is cultivated mostly by ex-tea-garden coolies, wheat, barley and potatoes. Ginger is grown occasionally in the Bodā pargana, but, though it is a valuable crop, it exhausts the soil and the cultivators do not care about it. Cotton used to be grown in some quantity by Meches and Gāros in high lands towards the foot of the Bhutān hills, but the opening of the tea-gardens and the introduction of forest conservancy has put a stop to their wasteful method of cultivation by juming and in 1907-08 only 100 acres were under this crop. It is probable that the cultivation of cotton will die out entirely in a few years, as the opening up of the district is forcing the Meches to abandon their migratory habits and to settle down to ordinary cultivation.

**IMPROVE-
MENTS IN
AGRICUL-
TURAL
PRACTICE.**

No improvements in agricultural practice call for notice except the abandonment of cultivation by juming by the Meches. The abundant rainfall and fertile lands of the district yield magnificent crops of rice and jute with very little exertion on the part of the cultivator and, as long as he can obtain all he wants without much effort, he has little incentive to adopt improved methods of cultivation.

**AGRICUL-
TURAL
IMPLEMENTS.**

The agricultural implements in most common use among the cultivators are the following:—*hāl* or wooden plough; *phāl* or ploughshare; *kodālī* or spade; *kurālī* or hatchet for splitting wood; *dāo*, a large knife or bill-hook; *khurshā* or *dhelābhāngā*, a wooden mallet for breaking up clods of earth; *māī*, a bamboo harrow for levelling the fields; *bidā*, a large bamboo or wooden rake for thinning and weeding the fields; it is usually drawn by bullocks; *khāntī*, an iron crowbar for making holes in the ground; *kānchī* or *kuchi dāo*, a sickle or reaping hook; *dāokā* or *pāsār*, a rake for weeding. A set of these implements, together with a pair of plough bullocks, are required to cultivate what is technically known as a *hāl* or plough of land, equivalent to about five English acres.

CATTLE.

The local cattle are small and weakly and no attempt has been made to improve the breed. An imported bull has been bought recently for the Jalpaiguri jail, but his services will be confined to the jail cows. Owing to the damp climate of the

Western Duārs, mortality among cattle is very great and it is not uncommon after a severe epidemic to see cows used for ploughing. Pasturage is abundant; in the northern *taluks* of the Western Duārs green fodder is always available and paddy straw is not used for cattle. Meches and other cultivators throw away the straw as soon as they have finished threshing or allow anyone who pleases to take it away. In the regulation *parganas* and in the southern *taluks* of the Western Duārs straw is stored for fodder and cattle are fed on it while the *ānan* rice is growing and they cannot be allowed to graze in the fields. During the winter months large herds of buffaloes from Purnea, Rangpur and Cooch Behār are grazed in the reserved forests and in the waste lands of the Fālākātā and Alipur *taluks*. Buffaloes are seldom used for agricultural purposes; the professional graziers keep them for milk, most of which is made into ghee. Although there is no lack of pasturage in the district taken as a whole, sufficient grazing lands near the homesteads of the cultivators have not been reserved in all parts; the want of these is particularly felt in the *pargana* of South Mānagmī. In the Bhālka *taluk* there are plenty of grazing lands, but the mistake has been made of not reserving tracks leading to them and cultivators naturally object to cattle being driven through their crops in order to reach the pasture grounds. It is hoped to remedy both these defects during the settlement which is now in progress.

A Veterinary Assistant is stationed at Jalpāigum and paid by Government. His duty is to tour in the interior of the district and do what he can to deal with outbreaks of epidemic disease. The most common disease is rinderpest, which causes great mortality among wild animals as well as among cattle and buffaloes; much can be done during an epidemic by inoculation with a specially prepared serum to save uninfected animals and to check the spread of the disease. Unfortunately the cultivators are conservative and suspicious and are very loth to submit their animals to treatment; on the tea-gardens, the influence of the Managers is usually sufficient to induce the coolies to allow their cattle and buffaloes to be inoculated, and much loss has been prevented in this way. During 1907-08 the Veterinary Assistant inoculated 2,417 animals against rinderpest, nearly all of which belonged to tea-garden coolies.

Veterinary
aid.

CHAPTER VI.

FORESTS

GENERAL
DESCRIP-
TION

The forests of the Jalpaiguri district are numerous and valuable and cover an even larger area than those of the adjoining district of Darjeeling. In addition to the reserved forests, which are situated entirely in the Western Duārs between the Tista and Sankos rivers, there is a large forest measuring 81 square miles, west of the Tista, which belongs to the Rāikat of Bāikanthpur. All the forests are plains forests, with the exception of about 45 square miles in the vicinity of Buxā which occupy hilly ground rising rapidly from 500 to 4,000 feet. The principal timber tree the importance of which is so great that the working of all reserved forests is directed towards obtaining a maximum quantity of mature timber from it, is *sal* (*Shorea robusta*), in some parts it grows nearly pure, but it is more often mixed with a large number of other species. The great difficulty experienced in dealing with the forests is to ensure natural reproduction of *sal* and at the same time to protect the forests from fire. The Bāikanthpur forests, which received little attention from its owners and was until recently burnt through every year to ensure good grazing for cattle and buffaloes, contains hardly a tree which is not twisted and blackened by fire; at the same time this repeated burning has destroyed the soft wood trees and dense herbaceous undergrowth which spring up faster than *sal* and choke and kill the young trees, so that the natural reproduction is excellent and young *sal* plants abound in every direction. In the Government forests, on the other hand, the work of fire-protection has been carried out carefully, with the result that, though the larger trees have been preserved, the dense undergrowth has seriously interfered with the growth of the young plants and natural reproduction has not been as satisfactory as could be wished. Possibly some method will be found of giving adequate protection from fire without discouraging the natural reproduction of *sal*. In addition to the tree bearing area a considerable area of savannah lands is included within the boundaries of the reserved forests. These grassy savannahs are a source of danger to the adjoining forests owing to their extreme inflammability, particularly when tortuous natural boundaries make it difficult to burn the outside grass, and near tea-gardens when the Managers object to the early burning of grass on their grants. In addition to the reserved forests there were until recently 5 square miles of protected forests in the Māniguri and Pālākātā tahsils, which were managed by the Civil Department. As they could not be properly protected and worked they have been handed over to the Forest Department in exchange.

for a corresponding area of land which contained little timber and was suitable for cultivation.

ADMINISTRATIVE
DIVISIONS.

All the forests in the district are at present controlled by the Forest Department, for the Baikantpur Forest has been placed under the Deputy Conservator of Forests, Jalpaiguri division, since the estate came under the Court of Wards. The reserved forests are divided for administrative purposes into two divisions, the Jalpaiguri and Buxa divisions, the head-quarters of which are at Jalpaiguri and Buxa, though the working centre of the Buxa forests is at Rajbhatkhoa, the station north of Alipur Duar on the Cooch Behar Railway. The forests of the Jalpaiguri division lie between the Tista and Torā rivers while those of the Buxa division are situated east of the Torā in the Alipur Duar subdivision.

The forests of the Jalpaiguri division cover an area of 182 square miles and are situated entirely in the plains at the foot of the Bhutan hills. They are divided into four ranges, Apalchand, Lower Tonda, Upper Tonda, and Maraghāt and consist of 12 isolated blocks, the names and areas of which are given below:—

JALPAIGURI
DIVISION.

	Area in sq. miles.
(1) Apalchand	28.67
(2) Malbati	50
(3) Khairānti	10
(4) Upper and Lower Tonda	79.03
(5) Dāina	25.01
(6) Maraghāt	21.50
(7) Rehti	5.10
(8) Dalgāon	2.30
(9) Sālharī03
(10) Dumchi	4.71
(11) Khairbārī	2.88
(12) Titi	12.76

The only tree of importance for timber in this division is *sal* (*Shorea robusta*). Other timber trees which are fairly numerous are *chilauri* (*Schima wallichii*), *sisu* (*Dalbergia sisu*), *khair* (*Acacia catechu*), *kāinjāl* (*Bischofia javanica*), *malugini* (*Cinnamomum cecidodaphne*) and *sintil* (*Bombax malabaricum*); but few trees of large size, belonging to these species, are to be found. The forests may be divided into four types, viz.:—*Sal* forest, Mixed, Evergreen, and Savannah; but these types merge into one another and are found in many places inextricably combined. The *sal* forest is in some parts nearly pure, with as many as 200 stems to the acre, but is more often mixed with varying proportions of other species, including *tatri* (*Dillenia pentagyna*), *udal* (*Sterculia villosa*), *arij* (*Terminalia tomentosa*), *pumbā* (*Careya arborea*), and *chilauri* (*Schima wallichii*). There are approximately 7,911 acres of *sal* in Apalchand, 161 acres in Malbati, 42 acres in Khairānti, 9,403 acres in Lower Tonda, 3,397 acres in Upper Tonda, 4,293 acres in Maraghāt, 484 acres

Character of
the forests

in Dalgāon, 244 acres in Dumchi, and 16 acres in Sālhāri. In the mixed forest, of which the greater part of Upper Tondū and Dumchi and the whole of Rehti and Titi are types, the soil is usually strong and the ground lower than that occupied by *sāl* forests. *Sāl* is found scattered here and there, and in the vicinity of river-beds the forest gradually turns into *khair* and *sissu* forest; the ground is often covered with a dense undergrowth of shrubs and creepers. The principal species found are *Lagerstroemia parviflora*, *Callicarpa arborea*, *Sterculia villosa*, and *Terminalia tomentosa*; the northern part of the Upper Tondū forest is mainly composed of *Schima wallachii* which often grows to a large size. The evergreen forest occurs in old alluvial soil in all depressions such as the sides of *phoras* and small rivers which are not occupied by grass. The species are very numerous and include *Lugmia*, *Glavocarpus*, *Echinocarpus*, *Michelia* and canes. The large grassy blanks in the forests are called *savannahs* and are important on account of their extent and of their bearing on the work of fire protection. In many of them settlers have been allowed to form forest villages, and to cultivate the land at a low rent on condition that they supply labour to the Forest Department when called upon to do so. Other *savannahs* have been sown with *mullata* which grows quickly and is useful in killing off the grass and preparing the way for the introduction of mixed forest.

Forest
manage-
ment.

The selection of forests for reservation was begun in 1872-73 and from that time to 1878-79 various forests were gazetted as reserved. The northern Tondū block was transferred from the Darjeeling district in 1881 and now forms part of the Upper Tondū forest. There was very little mature timber in the forests at the time when they were reserved as all big trees had been cut and removed previous to the annexation of the Western Duārs; it was decided, therefore, not to work the forests for 25 or 30 years except to remove dry or fallen trees. In practice, however, it has not been possible to adhere to this policy; urgent demands arose which had to be satisfied and a sort of compromise was effected by which the forests were preserved as far as was compatible with the supply of urgent requirements. For many years there was little demand for fuel from tea-gardens as they were able to satisfy their needs from the large stocks of firewood on their grants, but as early as 1883 some of them began to draw on the reserves for fuel. In 1891-92 a free grant of mature trees was made to the Bengal-Duārs Railway Company for sleepers when the original line was constructed; the value of this concession was estimated at Rs 30,000. The first working plan for the whole of the Jalpaiguri division was drawn up in outline in 1892-93 by Mr. Manson and a working plan, completed by Mr. Haines in 1896, was sanctioned in 1899 for ten years with retrospective effect from the date of its completion. This working plan remained in

force until 1905 when a revised plan was drawn up by Mr. Trafford and sanctioned by the Bengal Government. The main principle adopted was to provide as large a quantity of fuel as possible for the tea-gardens and at the same time to obtain a fair supply of large timber trees; the silvicultural method proposed was coppice with standards, promising *sāl* and other species which would provide saleable timber being reserved as standards. The period of rotation was fixed at 25 years for the coppice and at 100 years for the standards.

The neighbouring *raiya* take fodder for cattle, dry wood for fuel, and grass and leaves from the forests. The whole of the regular outturn of fuel is taken by the tea-gardens, but the forest area is not large enough to supply the demand. Some gardens near the Darjeeling boundary obtain their supply of fuel from the Tista forest division but, when gardens are not near the forests, or are remote from the part of the forests where cuttings are taking place, it is cheaper for them to use coal which can easily be obtained as the railway runs close to most of the gardens. Very few tea gardens have any fuel supply of their own left now. In the *sāl* area the system of working is that of improvement fellings; mature trees, bad trees, and trees with large crowns, which interfere with the growth of a number of others are marked for felling, the other species are cut by the tea-gardens for fuel. Steps are being taken to ensure a sufficient growth of young *sāl* by cleanings and weedings in places where seed has fallen and by freeing the heads of young trees, which are being suppressed by creepers or trees of inferior species. One-fifteenth of the *sāl* area is cut over annually. In the mixed forest the method of working is coppice and standards, one-twentieth of the area being cut over annually. The whole of the coppice fellings are taken by the tea-gardens for fuel. The *sāl* timber is sold to private purchasers on payment of a monopoly fee. Trees fit for cutting are marked in each range and tenders are called for; the person whose tender is accepted has the sole right of felling the marked *sāl* timber in that range. A date is fixed by which all the marked timber in a range must be cut and removed, the monopoly fee is payable in instalments and the price of the timber is realised before it is taken away from the forest. The areas over which fellings take place are divided into sections in proportion to the requirements of the tea-gardens, and the fuel is removed by the garden authorities and measured at the factory or other place where it has been stocked. There is no minor produce of any value except long pepper (*Piper longum*), small quantities of which are collected departmentally.

Forest
produce.

The danger from fire is not great. In 1900-01 about nine square miles of forests were burnt, but with the exception of that year, the annual average area burnt has been only one square mile from 1896-97 to 1903-04. The whole of the forests are protected

protection

and, during the fire season which lasts from the 15th February to the 31st May, fire patrols are appointed. Elephants, which are increasing in numbers in the district, are very troublesome; they trample down and destroy young trees, interrupt work and do much damage in the forest villages. Forest offences are neither numerous nor serious, the majority being cases of cattle trespass.*

BUXA DIVISION

The reserved forests of the Buxa division are very compact, there being only three separate blocks which are less than ten miles distant from one another. The total area of the forests is 327 square miles, about one-seventh of which is hill forest situated on the outer slopes of the Himālayas; the remainder is plain forest and occupies level or slightly undulating ground at the foot of the hills. The forests are divided into three ranges, Buxa, the area of which is 180.4 square miles, Borojhār 93.5 square miles, and Haldibārī 53.1 square miles.

Character of the Forests

As in the Jalpaiguri division the most important tree is *sāl* (*Shorea robusta*) which occupies about half the area of the forests and is mixed with a varying proportion of other species among which are *sidha* (*Lagerstrœmia parviflora*), *udal* (*Sterculia villosa*), *chiluvni* (*Schinus wallichii*), *mullota* (*Macaranga denticulata*), *jaman* (*Eugenia operculata*), *bahera* (*Terminalia belerica*), *simul* (*Bombax malabaricum*), *tutri* (*Dillenia pentagyna*), *parari* (*Stereospermum chelonoides*), and occasionally *tun* (*Cedrela toona*) and *lumpatia* (*Duabanga sonneratioides*). The total *sāl* producing area is about 87,000 acres, of which 85,000 are situated in the plains; in the hills *sāl* trees are scattered along the crests of the ridges and there is mixed forest in the intervening valleys. After the *sāl* the principal timber trees are *khair* (*Acacia catechu*) and *sissu* (*Dalbergia sissoo*).

The forests fall naturally into three main types—*sāl* bearing areas, *khair* and *sissu* bearing areas, and mixed forest areas and savannahs; in addition to these, unproductive river-beds occupy an area of about 11,000 acres. The *sāl* bearing areas vary from canopied high forest to thinly scattered trees in tangled scrub and creeper jungle. The growth is generally good but is much handicapped by creepers, which have almost ruined parts of the forest; these creepers seriously impede natural reproduction and in some places suppress and half strangle the existing trees. In the Buxa forest south of the 22nd mile line the drainage is not good and a rather large percentage of the exploitable trees are unsound. *Khair* and *sissu* trees are generally mixed with other species such as *Albizia*, *Bombax*, *Lagerstrœmia*, *Oroxyllum*, *Butea*, *Premna*, and *Culicarpa*, and are mostly immature, though there is a moderate supply of old trees ranging from 4 to 6 feet in girth. Reproduction is good in the well stocked areas, but elsewhere though *sissu* reproduction, mainly from root suckers, comes up, it

* I am indebted to Mr W. R. LeG. Jacob, Deputy Conservator of Forests, for assistance in preparing this account of the Jalpaiguri division.

is burnt back by the frequent fires and well established poles and saplings are rare; the older trees are much damaged by fire, most of them being half burnt through. Creepers are bad in places where fire protection has been successful. The mixed forests consist chiefly of species of *Lagerstrœmia*, *Bombax*, *Sterculia*, *Callicarpus*, *Dillenia*, *Schima*, *Piemna* and *Bauhinia* in the plains, and *Schima*, *Tertrameles*, *Magnolia*, *Duabanga* and *Cedrela* in the hills. A little bamboo is found in the hills but none in the plains forest. Reproduction is good but creepers give much trouble. In the savannahs the soil is usually poor and sandy, but these areas are for the most part rapidly filling in with tree species. In recent years it has been found necessary to form forest villages in order to augment the supply of labour.

The forests have been selected out of unoccupied waste at the disposal of Government. The first notification was published in 1879 when nearly 280 square miles of country were declared to be reserved forest; since that time other tracts have been added, the latest addition of importance being the Sachaphu forest containing 18 square miles which was reserved in 1905. The forests of this division had been in charge of the Forest Department since 1866, but no attempt at systematic working was made until 1874-75. From 1875 to 1888 nearly all the exploitation work was done departmentally, purchasers removing only a few thousand rupees' worth of *sal* timber annually; during the next ten years departmental work was almost suspended and purchasers removed nearly the whole of the small outturn obtained from the forests. In 1899-1900 departmental operations began again and sleepers were supplied to the Eastern Bengal State Railway.

Forest
manage-
ment

The present working plan was drawn up by Mr. C. C. Hatt and was finished by him in April 1905; it divides the forests into five working circles, namely, Buxā, Borojhār, Nilpārā, Haldibārī, and Bhutān ghāt. The principal object aimed at in the Buxā, Borojhār and Haldibārī working circles is to supply a maximum quantity of mature *sal* timber; in the Nilpārā and Bhutān ghāt circles efforts are directed to utilise the stock of damaged and over-mature *sissu* timber. In the three circles which mainly supply *sal* timber the high forest selection method has been adopted. Improvement felling: are also necessary: unsound and unpromising *sal* trees under 2 feet diameter are cut when they interfere with the development of the better specimens, and trees of other species are cut when they interfere with *sal* or trees of other species more valuable than themselves. In the Nilpārā and Bhutān ghāt working circles over-mature and badly damaged trees are cut as they can be disposed of.

There is little demand for forest produce from the local population. The gardens can obtain nearly all the timber and fuel which they require from their own grants which are very large; the cultivators want only bamboos and small poles for building,

Forest
produce.

both of which they can obtain from the waste lands under the management of the civil authorities. There is plenty of grazing ground outside the forests. *Sāl* timber is the chief marketable product; there is an almost unlimited demand for metre gauge *sāl* sleepers from the Eastern Bengal State, Bengal and North Western, and Bengal-Duār Railways. Dacca and other places in Eastern Bengal take most of the heavy *sāl* timber which is not cut into sleepers; it is taken by local purchasers to Alipur Duār where it is sold to merchants, most of whom come from Dacca and Rangpur. There is a limited demand for good *sissu* timber for the Calcutta market and tea-gardens take a little *sissu* for box planking. There is considerable difficulty in dealing with the produce extracted from the forests owing to the inability of the Cooch Behār Railway to carry it; the line is 2' 6" gauge and not only is its carrying capacity small and its rolling stock limited, but the timber has to be handled again at the Gitāldaha Junction where it joins the Eastern Bengal State Railway. The conversion of the line to metre gauge, which it is hoped to effect in the next few years, will greatly facilitate the working of the forests. Most of the timber is now carted to Alipur Duār and floated thence to the markets in Eastern Bengal; the cart road which runs parallel to the railway, and is not metalled, is unable to bear the heavy traffic, and is in a bad state of repair.

Protection.

Successful fire protection has rendered the *sāl* bearing areas much less inflammable than formerly and the only kind of fires to be apprehended in them are leaf fires during the hot weather which are not likely to cause much damage. In the *khair* and *sissu* bearing areas and savannahs the danger from fire is still very great. Mention has already been made of the damage done by creepers and attempts have been made to cut them. The area cleared annually from 1877-78 to 1901-02 averaged only 7 square miles; since 1901-02 an average annual area of 38 square miles has been cleared. A first creeper cutting throughout the *sāl* areas in the Buxā forests was finished in 1904-05 but so far only creepers on *sāl* trees have been cut. Elephants are very troublesome and do considerable damage; in the Buxā forest the Telegraph Department has been compelled to fasten the wire high up on large trees as the elephants pulled up all the telegraph posts.

FINANCIAL RESULTS.

The working of the Jalpaiguri division did not begin to show a steady profit until 1893-94 and in the Buxā division the expenditure exceeded the revenue in 13 out of the 22 years from 1882-83 to 1903-04. During the last four years both divisions have been doing well and have made handsome profits. The table below gives the figures for the last ten years :—

Year.	JALPAIGURI DIVISION.			BUXA DIVISION.		
	Revenue.	Expenditure.	Nett profit.	Revenue.	Expenditure.	Nett profit.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1898-99	54,568	24,131	30,427	17,452	23,315	...
1899-00	56,780	34,378	22,402	28,826	33,683	..
1900-01	51,345	37,101	18,244	43,228	37,135	6,093
1901-02	56,774	41,918	14,856	62,675	40,032	22,643
1902-03	68,621	41,089	27,532	57,334	55,917	1,417
1903-04	55,199	31,738	23,461	63,251	76,694	...
1904-05	88,521	50,134	38,387	1,20,789	84,783	36,006
1905-06	99,403	41,807	57,596	1,32,134	91,671	40,463
1906-07	1,33,630	48,710	84,920	2,15,937	97,351	1,17,586
1907-08	1,04,730	41,662	63,068	2,10,893	1,21,220	99,673

It will be seen that in 1906-07 the two divisions between them made a surplus of over two lakhs of rupees, and in 1907-08 of over one and a half lakhs. The forests have been carefully preserved by the Forest Department and the result of the good work done is becoming apparent; the Buxā division is capable of still further development but its working is hampered by the difficulty experienced in getting the timber to the markets of Eastern Bengal and Calcutta.

The Bāikanthpur forest is situated on the west bank of the Tista river and forms a long narrow strip stretching from the boundary of the Darjeeling district to within a few miles of Jalpaiguri. The following description of the forest is taken from Dr. Buchanan-Hamilton's M. S. Account of Rangpur written in 1809:—"The woods of Battis-hazāri or Bāikanthpur have been nearly exhausted of *sal* and *sisu*, the only trees that are cut for exportation, although they contain a great abundance of timber in reality, perhaps, more valuable. Still, however, some people are employed partly in these woods and partly in those which are adjacent to the territories of Bhutān and Nepāl. I shall give here an account of the whole, as I have no means of distinguishing between the quantity procured in each. The woods of Bhutān that are near the rivers are as much exhausted as those in the Company's territory, so that the greater part of the timber is brought from Nepāl; and none is cut at a further distance than three miles from some branch of the Tista or Karātoya,

THE BAI-
KANTHUR
FOREST

by which the logs can be floated into these rivers. In places where the ground is quite level, the logs are placed on two small wheels, and dragged by men; where the ground is broken or uneven they are carried. Cattle are never employed so that no large log is ever procured; and the felled trees are cut up into pieces which are shorter and shorter in proportion to their girth, in order that the weight of all the logs may be nearly equal. No timber is cut except when commissioned, and the value is always paid in advance. The purchases are mostly made by native merchants from Debiganj in this district, and from Kangtā-pukhuri in Nator; the timber is intended chiefly for building boats. The advances are made to men called *dafadars* who employ workmen at monthly wages; and each of them contracts to deliver what is called a *dhura* of timber at a specified place on a river bank, from which it can be floated down stream. The logs are merely freed from the branches and bark; the trees having previously been cut two or three feet from the ground, as more convenient for the stroke of the hatchet, the use of the saw being unknown, and the waste of timber being considered of no consequence. The stem of the tree is cut into as many lengths in proportion to its thickness as it will admit, and the tops and large branches are left to rot, or to be carried off by any person who chooses.

The working of this forest has been supervised by the Divisional Forest Officer, Jalpaiguri, since 1905; cultivators and graziers offered great obstruction to the proper working of the forest as they objected to the interference with their former pleasures of "shikar" and burning the forest at will. In June 1908, on the application of the Manager of the Estate which is under the Court of Wards, a preliminary notification was issued for the reservation of the forest. The forest has been grazed and burnt excessively for many years, but there still remains a large amount of *sal* chiefly poles, and with care and protection it will become in time once more a valuable property. The higher ground is stocked with *sal* poles which show signs of many fires, and there is a complete absence of the thick undergrowth which characterises the adjoining Government forests; underneath the *sal* is grass and, in the grass, an enormous number of young *sal* seedlings have sprung up since the forest has been protected from fire. The low-lying parts are covered with low scrub jungle with little timber of any value.

The forest is being divided into two ranges, the Sirogarā range in the north and the Shikārpur range in the south. The revenue is derived mainly from the sale of dry and dead *sal* poles and from grazing; a small amount of fuel is also sold. In 1906-07 the revenue was Rs. 28,593, and the expenditure Rs. 4,560, giving a surplus of Rs. 24,333; this compares well with 1876 when the proprietor farmed out the whole tract at a rental of Rs. 3,000 per annum.

Before leaving the subject of the forests, it is desirable to refer to a suggestion made in 1906 that floods in the Western Duars had increased in recent years and had done more damage owing to the practice of *jumming*, or shifting cultivation, on the watersheds of the destructive rivers. There is no doubt that large areas have been deforested in this way in Sikkim and Bhutan, but there is nothing to show that floods are worse or more frequent now, than they used to be in former years. The general consensus of opinion in the district is that *jumming* has had little or no effect on the quantity of water which goes into the rivers and cannot be responsible for causing the floods of recent years. The floods in 1902 and 1906 were caused by heavy rainfall coming at a time when the rivers were full and the soil so saturated that it could not retain more moisture; in 1902 there was exceptionally heavy rain in September following an August in which the rainfall was quite up to the average; in July 1906 the rainfall was above the normal and was followed by unusually heavy rain in August. In both cases the rivers were full and the soil saturated when further heavy rain added volumes of water which could not be retained by the land and which the already swollen rivers were unable to carry off.

DEFORESTATION
OF
SIKKIM AND
BHUTAN.

CHAPTER VII.

NATURAL CALAMITIES.

Owing to its position at the foot of the hills and to the number of rivers and streams which flow through it, the Jalpaiguri district has always been peculiarly liable to floods. Mention has already been made of the disastrous floods in 1787 when the Tista river, which used to flow into the Ganges, suddenly deserted its channel and turned its waters into a still more ancient bed by which it empties itself into the Brāhmaputra in the Rangpur district. The numerous deserted river-beds which may be seen throughout the district and particularly in the Western Duārs show the facility with which the rivers change their courses, often as the result of a sudden flood caused by heavy local rain in the hills. There were serious floods on the river Tista in 1881 and 1892, but the worst floods in recent years occurred in 1902 and 1906.

FLOODS IN
1902.

The flood in 1902 was confined to the basin of the Tista river and was caused by general and extremely heavy rain in the Darjeeling hills on the 27th September. Darjeeling itself reported a rainfall of 12 inches for the 24 hours and the downpour was even heavier in other places in the hills. The rainfall at Jalpaiguri during the month of August was above the average and in September more than twice the normal amount of rain fell; the Tista was in consequence very full when a further volume of water was poured into it. The river began to rise rapidly at about 3-30 P.M. on September 27th and continued to rise steadily till 5-30 A.M. on the 28th when it reached a height of eighteen inches above the highest flood level of the preceding ten years; during these fourteen hours its rise was six feet. It remained at its maximum height for about half an hour and then began to fall as rapidly as it had risen; by 6-30 P.M. on the 28th it had fallen to the height of an ordinary flood. The following description of the state of things in the Jalpaiguri town was written by the Deputy Commissioner Mr. Forrest:—

'The sudden rise in the flood came as a surprise to everybody in Jalpaiguri. I was awakened at 3 A.M. on the morning of the 28th by the head constable of the treasury guard who told me that the flood had risen to the treasury steps and was threatening to carry away the treasury. I got up and proceeded to walk to the treasury. The water was over my knees in my compound and on the metalled road to the treasury it was rushing with great force about two feet deep. Large pieces of drift wood were being carried along over the road, and getting along at all was a matter of some difficulty. It took me almost half an hour wading to get

to the treasury' (a distance of about three hundred yards). 'When I arrived I saw that the water was within a couple of inches of the floor of the strong room, so I sent for the treasurer and the treasury officer who arrived after an interval of over an hour. In the meantime the flood had risen about six inches and had flooded the strong room. When the treasurer and treasury officer arrived, we opened the treasury and shifted stamp boxes and opium out of danger of the wet. No damage was done. About an hour after this, the flood showed signs of abating, so leaving the treasury officer in charge of the treasury, I waded back along the road till I came to the Karla bridge which was well above the flood level. I then walked to the post and telegraph office and ascertained that communication with Darjeeling was uninterrupted and thence to the railway station where I could get no information beyond the fact that the line was breached between Jalpaiguri and Haldibāri and that booking had been stopped.

'From subsequent enquiries it appeared that remarkably little damage was done within the Municipality; some people living in the lower parts of the town were flooded out for a time and a small amount of damage was done to the stocks of two or three big merchants—sugar, salt, dal and potatoes. Prices of provisions are very slightly higher owing to the breaches on the Eastern Bengal State Railway. Most offices and other public buildings have their floors covered with mud but no serious damage was done.'

On the west of the Tista the river began to overtop its banks at Rangdhamali about 9 miles above Jalpaiguri and spread over the country as far as the river Karla, in this area the rise was gradual as the water had plenty of room to spread. Below Jalpaiguri the Eastern Bengal State Railway runs for a considerable distance parallel to the Tista and at no great distance from it. The railway embankment, which has in this section few bridges and culverts, checked the free spread of the flood of water, which made a wide breach in it and flowed away with considerable violence over the rice-fields until it reached the Ghoramārā river. Between this breach and the Mandalghāt railway station there were several other breaches, and a bridge was washed away.

On the east bank the condition of the country is somewhat similar; the river flooded the country below Gazalduba, but the water encountered no check until as far south as the Domohani station on the Bengal-Duars Railway. From this point the railway embankment runs at a distance of not more than half a mile from the river, and the water, making a large breach 200 feet wide south of Domohani station, rushed down an old *khal* in the direction of Mātnaguri. The flood water cut the railway again near the Bhotepati station and rejoined the Tista. The country between the railway line and the river was flooded for several miles south of Jalpaiguri.

Extent of
the floods

Damage
done by the
floods.

Loss of life was not heavy and was confined to places where the rise of the water was rapid. Three herdsmen, who were grazing buffaloes on a large *chur*, were not able to reach the high bank in time and were drowned; at Barnes Ghat three women and two children, members of a sweeper family living in a hut on the extreme edge of the river, were swept away and drowned. The total number of lives lost was only ten. Comparatively little damage was done to the crops; the winter rice benefited by the silt deposited by the flood; the standing jute was unharmed, but much of the jute which was being steeped was washed away and lost. The loss of cattle was serious, but it is difficult to form an accurate estimate of it: 200 dead cattle and 10 buffaloes were counted along the banks of the river and the Deputy Commissioner put the total loss at 350 head of cattle and 20 buffaloes. The villages on both sides of the river were full of stray cattle which had been carried down by the floods and it took a long time before they were all claimed and restored to their owners. There was a large herd of nearly 500 buffaloes on the Nathua Khal when it was submerged in the flood and no less than 79 of them were rescued at the Mandalghat village 15 miles down stream; nearly all the buffaloes got ashore at one village or another.

The damage done to the railways has been already mentioned. The big breach on the Eastern Bengal State Railway took over ten days to repair and 3rd class passengers were sent round by Lalmanir Hat and the Bengal-Duars Railway. A bridge was carried away on the Jalpaiguri road and another on the Jalpaiguri-Alipur road, but otherwise the roads received comparatively little damage.

Floods in
1906

In 1902 the floods were confined to the basin of the Tista river, but in 1906 they were general over the whole district. Heavy and continuous rain fell in July during which month 40.05 inches were registered at Jalpaiguri and the fall was even more heavy in the part of the district near the hills. In previous years floods were caused by sudden downpours of rain lasting a comparatively short time; the feature of 1906 was the long succession of rainy and sunless days. On the night of August 3rd and morning of August 4th, all the rivers and streams in the district rose simultaneously and the damage done to railways and roads was enormous. Owing to the interruption of communications it was some time before the full extent of the mischief could be ascertained.

Jalpaiguri
town.

At Jalpaiguri nearly 24 inches of rain fell between 8 A.M. on July 28th and 8 A.M. on August 4th. The river Tista which had been rising steadily began to rise very fast on the night of August 3rd and by 6 o'clock next morning much of the town was flooded. The water rushed through the compound of the Deputy Commissioner's bungalow, and across the road into the compound of the circuit house where it was over two feet deep; the cutcherries were

surrounded with water and at one time it looked as though some of the temporary buildings would fall; steps were taken to remove the records, but the river fell as fast as it had risen and it was not necessary to do this. West of the Karla river the place was flooded right up to the Club, and the houses were standing in water; the Superintendent of Police spent the morning in a boat rescuing the women and children in the police lines and taking them to his own house for safety. In the bazar considerable damage was done on both sides of the Karla river, which was fed by a *khal* running into it from the Tista, and several houses fell.

There was no loss of life and the number of cattle drowned was remarkably small considering how widespread the floods were. Some damage was done to the *bhadoi* rice crop; the continuous rain delayed the harvest, and in a few instances close to rivers, crops were destroyed by the rush of water. The principal damage was, however, to communications; every railway and every road of importance in the district were breached and traffic stopped. The rain continued for over a fortnight after the big flood, and seriously interrupted the work of restoring communications. During the first 20 days of August not one day passed without rain, the amount registered at Jalpāiguri in this period being 48.96 inches, and at Alipur Duār 50.28 inches.

There was a bad breach near Mandalghāt on the Eastern Bengal State Railway and part of a masonry bridge was carried away. No train got through on August 11th and no mails were delivered, as it was impossible to get them over the breach where the rush of water was so great that an elephant could not cross it. The engineers set to work promptly and by August 8th trains were running through on a diversion.

On the Cooch Behār State Railway there was a succession of breaches between Gitaldaha Junction and the river Torsa, including two large gaps where bridges had been washed away. A mile from Alipur Duār a culvert was washed out and a hole, 22 feet deep scored by the water; it took more than six train loads of boulders to fill up this hole. It is a remarkable fact that the bridges, consisting of wooden piles and iron girders on the road running parallel to the railway, stood the flood, while the corresponding masonry structures on the railway were washed out, though the road bore the first rush of the water. The line was opened for all classes of traffic on August 19th with one transshipment at the largest breach, where a bridge was washed away.

Some damage was done to the Bengal-Duārs Railway north of Domobani station, but the section of the line from Lalmanir Hāt to Māl Junction, including the small but important branch to Rāmsāi Hāt, was soon in working order. At Māl the line divides, one branch going west to Bāgrakot, and the other east to Madari Hāt; these branches run parallel and close to the hills and across the water-line of the country; they bore the full brunt of

Damage
done by the
flood

Railways.
The Eastern
Bengal State
Railway

The Cooch
Behar State
Railway

The Bengal-
Duārs
Railway.

the floods and were literally smashed to pieces. West of Māl several bridges were washed away including the one over the Kumlai river and a series of breaches were made in the embankments, the widest of which was near the Chel river. The eastern branch suffered most severely; there was a large breach in the embankment between Māl and Chalsa stations, but the worst damage was done between Chalsa and Nāgrakātā. North of the railway line the Jaldhākā river divides into two streams, one of which is called the Hathinalla; these are spanned by two large bridges, each about 500 feet long, between which there is a high embankment, which was protected by a rocky islet covered with trees. The flood cut away the island and about 1,100 feet of the embankment; the Hathinalla bridge stood, but not a yard of embankment remained attached to it, and in the gap a swift stream flowed over a stony bed. All the protective works were swept away and not a vestige of them was to be seen after the floods had subsided. Farther east the Dāina river cut away 900 feet of embankment, and there were numerous smaller breaches including one rather large one near Macāri Hāt. It was not until November that this section of the line was open to traffic again.

Telegraph
lines.

The telegraph lines from Jalpāiguri to Alipur Duār, Rāmshāi Hāt and Māl were uninterrupted, but all the lines to other parts of the Duārs were broken down. No time was wasted by the Telegraph Department and communications were quickly restored.

Measures
taken to re-
store
communica-
tions.

The complete breakdown of railways and roads made the position in parts of the Duārs very serious. Nāgrakātā and all the gardens to the east of it became dependent on the Rāmshāi Hāt railway station for their supplies of rice and coal and for the means of getting their tea away; the traffic thrown on the Rāmshāi Hāt-Sulkaṭārā and Rāmshāi Hāt-Gāirkātā roads was in consequence very great and efforts were directed to make these roads passable for traffic and to keep them open. At the same time more boats had to be railed up from Barnes Junction and placed on the ferries over the Jaldhākā and Dāina rivers. The work was carried out as speedily as possible, but until traffic could get through, rice sold at Nāgrakātā at three seers to the rupee. It was evident after this experience that the eastern branch of the Bengal-Duārs Railway could not be depended on and that good communication by road was necessary between Rāmshāi Hāt and the tea-gardens between the Jaldhākā and Torsā rivers. A road has now been constructed through the Tondū forest which, it is hoped, will be unaffected by floods and which will ensure communication between Nāgrakātā and the railway if the eastern branch breaks down again. It is proposed to protect the town of Jalpāiguri by making an embankment along the Tista; this will prevent the river from overflowing its banks and should save the town from floods.

Famines are unknown in the district, though until 1905 it was included among those liable to famine. The Bengal famine of 1866-67 hardly affected Jalpāiguri at all, though the demand for grain in less favoured parts of the Province caused a considerable increase in the exports of rice, with the result of raising local prices to about double the ordinary rates. In 1873-74 there was slight distress in those parts of the district which border on Dinājpur, Rangpur, and Purnea, but no relief measures were called for. As Jalpāiguri is bounded on the north throughout its entire length by the lofty range of the Himālayas, it is very improbable that either the local rainfall, or the supply of water brought down by the rivers and streams would be affected by even the severest drought which might occur elsewhere. In the improbable event of a famine the railways, roads, and navigable rivers in the district afford sufficient facilities for the importation of grain to prevent the danger of the isolation of any particular tract of country. FAMINES.

In the 1897 earthquake much damage was done to roads by subsidence and by the opening of deep fissures, and many bridges and buildings were destroyed. It is not uncommon even now to come across earthquake cracks when shooting in the jungle. EARTH-QUAKES.

CHAPTER VIII.

LAND REVENUE ADMINISTRATION.

The Jalpāguri district consists of two widely different tracts of country, viz., the *parganas* of Bāikanthpur, Bodā and Pātgrām formerly included in the Rangpur district, and the Western Duārs, wrested from Bhutān in 1864, and, in giving an account of the land revenue administration, it is necessary to deal separately with them.

THE
PERMANENTLY
SETTLED
PARGANAS.

The *parganas* of Bāikanthpur, Bodā and Pātgrām formed part of the Koch kingdom, but were conquered and annexed by the Mughals, who incorporated them in the frontier *Paujant* of Fakirkundi or Rangpur; they were transferred to the East India Company with the cession of the *diwani* in 1765. At first the Company followed the Muhammadan practice of farming out the land revenue to contractors, but discontinued this system after the exactions of a notorious farmer, Rājā Debi Singh of Dinājpur, had led to an open rebellion of the cultivators in 1783. The *parganas* were permanently settled in 1793 with the rest of Bengal and are now called the permanently settled or regulation part of the district in contradistinction to the Western Duārs. The *tauzi* roll shows that they are divided into 82 estates, 169 revenue-free estates, and 252 *rent-free* tenures, but, with the exception of a few small areas, they are included in two large *zamindāris*, *pargana* Bāikanthpur belongs to the Bāikanthpur Estate, now under the management of the Court of Wards, and *parganas* Bods and Pātgrām to the Chakrajāt Estates of the Mahārājā of Cooch Behār. Dr. Buchanan-Hamilton, writing in 1809, gave the following account of these *zamindāris*:—‘Pātgrām Estate, which comprises the police division of the same name, is the property of the Cooch Behār Rājā, and contains 62 *maucas*, or collections of villages. More than half the estate is let to large farmers, some of whom hold under leases called *upanchahi*, which are granted for a certain specified term, and not according to a particular area, so that their rent cannot be increased nor their lands measured. The *don*, or local land measure, is equal to 15,670 square feet, or 1.08 Calcutta *bighas*. There are 30 *joidars* who pay their rents directly into the office of the Rājā’s collector; these are called *khāry joidars*. The others, who pay their rents to the village officers, are called *diktbandi*. The large farmers let out to under-tenants as much land as suffices to pay their rent, and cultivate the remainder through *prayās*, on the usual sharing tenure. The average rent paid by the *joidars* to the Rājā is, I am told, only Rs. 3 for 10 *dots*, equal to 4½ annas a Calcutta *bigha*, but I believe

Dr.
Buchanan-
Hamilton’s
account.
Pātgrām.

the tenants have to pay the whole of the village establishment. The people are very poor, shy, and indolent.

¹ Bodā is a very fine estate, also belonging to the Cooch Behār Rājā. It contains 402 *manzas* or *dihis* besides 27 large *kharaj* farms, such as I have mentioned in Pātgrām. No *takhtwaj* land is mentioned in the Collector's papers; but it is said a very large part has been granted rent-free by the Rājā, both to religious persons and to his own servants. Most of the farms were originally large, but they have in general been reduced to a small size, by subdividing among heirs, a most ruinous practice, which should be entirely prohibited. The whole estate is divided into *taluks*, and these again into *mahals*, each of which was originally one farm. In every *taluk* are from two to five *tahudars*, who are wealthy farmers appointed by the Rājā according to the wishes of the other tenants, and are usually continued in office for several years. The *tahudars* find security for the whole rent, and receives from the tenants from Rs. 50 to Rs. 175 a year, according to the extent under his charge; the tenants pay the whole village establishment of clerks (*lit-wans*), and various kinds of messengers *sindars*, *palis*, *kotwals*, etc.). The lands were not measured when the settlement of the Rājā's estates was made, the tenants being very averse to such a course, as might naturally be expected, for the rent which they pay is very small. The leases specify neither the term of years for which the holding is let, nor the measurement of the farm, but only the rent stipulated to be paid for the farm. If any tenant goes away, the others pay the rent until they can procure a new tenant, or else they divide the land among themselves. The Rājā has, therefore, no interest, except to collect the rent with as little expense as possible, and to big and squeeze all that he can from the tenants. There is no economy in the management. In some *taluks* no *tahudars* can be found, and these are managed by *gomastās*, or agents, each with a large establishment. The *tahudars*, who are men of property, and who ought to pay their whole rent into the Rājā's office, make delays, so that six *tahudars* or stewards are required to refresh their memories. The twenty-seven original large farms, which are not dependent on the *tahudars*, but which, if undivided, would have paid their rents immediately into the Rājā's office, have now subdivided into so many small shares, that a whole host of subordinates is required to manage them. In fact, the Rājā's interests in this estate seem to have been very much neglected.

Bodā.

² Baikanthpur or Battar-Hazāri, although part has been alienated to Bhutan, is still a very fine estate, and comprises the two entire police divisions of Fakirganj* and Sanjā-sikāi.† It is not included in any *sarkār* or Muhammadan division of the country, having only been added to Bengal since the British assumed the government of the country. A person named Sisu,

Baikanthpur,

* Now Jalpāiguri.

† Now Rājganj.

grandson in the female line of the Koch Hajo (the founder of the Cooch Behār Rājās), is the original ancestor of the Bāikanthpur family. It is generally asserted that Sisu was the son of Jirā, the daughter of Hajo, but the family themselves allege that he as well as Visu (another grandson of Hajo and the first of the Cooch Behār Rājās, who was converted to Hinduism) was the son not of Jirā, but of her sister Hinā, and that his father was the god Siva, on which account all the members of the family assume the name of Deo, and return no salute that is made to them by any person. Sisu, on the conversion of Visu to Hinduism, took the title of Sib-Kumar, or young Siva; he was appointed hereditary Rāikat, or the second person in rank in the Koch kingdom, and received the Bāikanthpur estate as an appanage.

Formerly the family resided at Bāikanthpur, where there was a little cultivation scattered among the woods; while all the southern part of the estate was allowed to be thickly overgrown with reeds and bushes, as a defence against the Muhammadans. Dharmā Deo, on the decay of the Mughal power, left Bāikanthpur and settled at Jalpāiguri. He began to clear the lands in the south, which are now well cultivated; but the tracts in the wood- and jungles to the north, which were formerly cultivated, are now neglected. There are no large tenants on the estate, and the rents are still very low owing probably to the vicinity of Bhutān and Guikhā' (Sikkim, then held by the Nepālis), 'where there is much waste land; and a large proportion of the tenants are constantly removing from one jurisdiction into another. The actual rent realised from the tenants is, I understand, about 4½ annas per *don* of land, good and bad, containing 12,472 square feet, or about 0·86 of a Calcutta *bigha*. The maximum rent for a farm, 20 *don* in extent, is said to be as follows:—House and garden land, Rs. 15; first quality land, Rs. 12; second quality land, Rs. 9; third quality land, Rs. 7; fourth quality land, Rs. 4; total Rs. 47. Originally the farms were let by guess measurement, or by *kaldari* or "ploughs." That is, a farm was estimated to contain as much as could be cultivated by a certain number of ploughs, and paid a fixed sum for each, a custom which once probably extended all over Kāmrup. About the year 1788, land measure was first introduced. The whole estate is divided into fifteen *taluks*, and the establishment is a very moderate one. In Sanjāsikātā, which is the largest *taluk*, there is one *taheildār* (steward), one clerk (*muharrir*), three inspectors of villages (*pradhāns*), one valuer of money (*poddār*), one chief messenger (*sardār*), one assistant messenger (*mirdha*), four ordinary messengers (*pāiks*), one officer (*jamadar*), and four matchlockmen (*barhmadās*) and four sweepers. There is no subordinate village establishment. The whole are paid by money wages.

In the permanently settled *parganas* all the available land has been brought under cultivation; the only large uncultivated

area is the Baikānthpur forest. The Cooch Behār *zamindāris* are well managed; the Manager has his head-quarters at Debiganj, and supervises all the estates, which are divided into *tahsils* for collection purposes. The registers and accounts are kept up carefully, so that the position of any tenant can be easily ascertained. In order to ensure that transfers of holdings are recorded in the *zamindāri* offices, no fees are charged from the tenants for mutation of names. The Baikānthpur Estate is under the Court of Wards; the Rāikat was born on the 9th October 1893, and is at present being educated at Darjeeling. The estate has been badly managed in the past and the interests of the proprietor have suffered; the rent-roll has not been kept up to date and no mutations of names have been recorded for at least 50 years, so that it is a difficult matter to find out who is the possessor of any particular tenancy.

A record of rights is now being prepared under Chapter X of the Bengal Tenancy Act. In the course of these proceedings, the area of each tenancy, the facts of its possession and the status of the tenant will be determined. Where the present rent is found to be liable to periodic revision, a fair and equitable rent will be settled.

The tenants in both *zamindāris* are prosperous; their rents are low, and they are not harassed by illegal exactions. Unfortunately some of the land has passed into the hands of middlemen, e.g., Mārwaris, pleaders and others who are not cultivators, these men hold as *jotdārs* under the *zamindār*, but are mere rent receivers. The tenants.

The tenants in these estates are divided into tenants-in-chief (*jotdārs*), sub-tenants (*chukānidārs*, *dar-chukānidārs* and *dar-a-dar chukānidārs*) and holders under the *Metayer* system (*adhīdārs*). The *jotdārs* are tenants holding immediately under the *zamindārs*; a large number of them rank as tenure-holders and others as *rainats* under the provisions of the Bengal Tenancy Act. The *jots* vary greatly in size. When the *jotdār* is not a middleman, he is usually a substantial farmer, possessing a considerable amount of capital and generally well-to-do. Jotdārs.

The *chukānidārs* are tenants holding land on a money rent immediately under the *jotdārs*. They have a right of occupancy and can transfer their lands by sale or gift. Most of them are well-to-do and some have *jots* or shares in *jots* in addition to their *chukāni* holdings. The *dar-chukānidārs* hold their land in the same way under the *chukānidārs* and the *dar-a-dar chukānidārs* under the *dar-chukānidārs*. Most of these inferior tenants have acquired a right of occupancy under the provisions of the Bengal Tenancy Act. It is difficult to say how far the process of sub-leasing extends, but there are probably not very Chukānidārs.

many *dar-chukānidārs* or *dar-a-dar chukānidārs*. Figures are being collected which will show the true state of affairs.

Adhiārs.

Adhiārs or *prajās* are, as mentioned above, holders on the *Mettayer* system. They cultivate land immediately under a *jotidār*, *chukānidār* or derivative *chukānidār*, but whatever the designation or status of the *adhiār*'s immediate superior may be, he is known as the *adhiār*'s "*giri*." Half the produce of the land goes to the *giri* and half to the *adhiār*. The *giri* usually makes an advance of seed or cash to the *adhiār* which is adjusted when the produce is divided. The ploughs and cattle sometimes belong to the *giri* and sometimes to the *adhiār*; not infrequently the *giri* owns parts of the agricultural stock and the *adhiār* owns the remainder. The legal status of the various classes of *adhiār* is somewhat uncertain, but the Board of Revenue, Eastern Bengal and Assam, has recently passed orders that *adhiārs*, who are independent of their *giris* in the matter of ploughs and cattle, are to be treated as tenants, irrespective of the length of time during which they have occupied the lands which they cultivate.

THE WEST-ERN DUARS.

The Western Duārs includes the tea-gardens, which are divided into 180 grants or temporarily settled estates, and occupy an area of 368 square miles, and the reserved forests, which cover an area of 509 square miles. The rest of this portion of the district is divided into four *tahsils*, each of which ranks as an estate in the *tanzi* roll. To these may be added the small *tahsil* of Ambāri Fālākā which, though not falling within the boundaries of the Western Duārs, was acquired at the same time and is settled in the same manner, so that in all there are 180 temporarily settled estates, and 5 Government estates in the Jalpāiguri district.

Temporarily settled estates.

The rules under which lands are leased for tea cultivation have been altered on several occasions, but have always been similar to those in force in the Darjeeling district. The old rules have been replaced by the Waste Land Rules which were issued by the Government of Bengal in 1896 and are still in force. Under these rules the applicant must satisfy the Deputy Commissioner and Superior Revenue authorities that he has sufficient capital at his command to enable him to open out the grant; he must deposit the cost of surveying the land calculated at the rate of one rupee an acre of the estimated area and is also required to execute an agreement to pay at a similar rate for any land in excess of that originally estimated. When this has been done the Deputy Commissioner directs a detailed enquiry to be made in order to ascertain whether the land can be leased; if he decides to lease it, he directs a survey to be made and, at the same time, a valuation of the timber is made by the Forest Department. The applicant is called on to pay any sum due on account of the cost of survey and also the value of the timber. When he has

done so, he receives a preliminary lease for a term of five years, the land being rent-free for the first year and after that paying a rental of 3 annas an acre for the second year and an additional 3 annas for each successive year up to 12 annas an acre. Each grant must be compact and capable of being enclosed in a ring-fence; it must ordinarily not contain more than 1,500 acres, but larger grants may be made for special reasons. The rights conveyed by the preliminary lease are heritable and transferable subject to certain conditions, viz., that the entire grant and not a portion of it is transferred by registered deed; that the conditions relating to the clearance of the land are duly observed; that a transfer fee is paid; that the Deputy Commissioner is satisfied that the transferee has sufficient capital to enable him to cultivate the grant; and that the transfer is registered in the Deputy Commissioner's office within one month. Government reserves all rights to minerals and quarries, and the right of the public to fisheries and a right of way along either bank of every navigable stream are also reserved. The lessee is bound to allow public access to springs of water on his grant, when it is necessary for the convenient supply of good water to persons living in the vicinity. Provision is made for the residence of the lessee or of a duly appointed manager on or near the grant, for the erection and maintenance of proper boundary marks, and for the supply of information as to births and deaths of residents on the estate and as to the progress and outturn of cultivation. Any land covered by the lease, which may be required for a public purpose, may be taken up by Government free of cost on a proportionate reduction being made in the rent and on payment of the value of any improvements on the land acquired. Lessees can, with the permission of the Deputy Commissioner, club or amalgamate their grants, but no isolated grant can be amalgamated with other grants lying more than two miles away from it. Any unauthorised amalgamation subjects the lessees to forfeiture of all rights in the lands so amalgamated. If it is found by inspection that during the currency of the lease, not less than 15 per cent of the total area of the grant has been brought under cultivation by means of good husbandry, and actually bears tea plants, the lessee is entitled to the renewal of the lease for a further period of 30 years, and to renewals for similar periods in perpetuity, but Government reserves the right to fix the rent, provided that it shall not be less than 12 annas an acre on the entire area of the land leased, nor exceed the rate of rent per acre, paid in the neighbourhood at the time of renewal, for the highest class of land under ordinary cultivation. The highest rates of rent are payable by tea-gardens in the Māinaguri tahsil; land under tea is assessed at Rs. 2 an acre, homestead and bamboos at Rs. 3 an acre and waste land at 6 annas an acre. The rates diminish as one proceeds east, and are lowest in the Bhāgīka

tahsil. The renewed lease conveys a heritable and transferable right in whole or in part, provided that due sanction is obtained and the transfer properly registered; all the other conditions of the preliminary lease hold good. The lessee is liable to forfeit his lease if he fails to comply with any of its provisions. If he fails to comply with the clearance conditions he may be allowed to hold on from year to year as a tenant-at-will for a term not exceeding three years, and if, during this period of grace, he succeeds in bringing at least 15 per cent of his grant under tea cultivation, he may be given a renewed lease. Government reserves to itself the right to exclude any particular area from the operation of the rules and to sell grants in that area by auction. Reserved forests, lands having valuable timber in considerable quantities and in compact blocks, lands in respect of which any person, or village community, possesses rights which render it undesirable to grant them for the purpose of tea cultivation, land lying within a distance of 60 feet from the centre of any public road, and lands expressly exempted by Government are not to be leased.

**Government
estates.**

The Government estates in the Jalpaiguri district include all the Western Duars outside the tea-gardens and reserved forests and the *tahsil* of Ambāri Falākātā situated on the west of the Tista river. Ambāri Falākātā was divided into 56 *jots* at the last settlement and what waste land is left is not worth cultivating; it resembles in every respect the Raikanthpur pargana by which it is surrounded. The *jotdārs* pay their rents into the Jalpaiguri treasury, and the estate is managed by one of the Deputy Collectors, who visits it from time to time. The four *tahsils* of the Western Duars are Māinaguri, Falākātā, Alipur, and Bhālka. Nearly all the available land in the Māinaguri *tahsil* has been leased out and there is keen competition for any land fit for cultivation; numbers of applications were received for plots of land in a small area which was disforested and thrown open to settlement and the waste lands included in the *jots* are being speedily brought under cultivation. Falākātā is not far behind Māinaguri and, if the present rate of progress continues, will soon be as well cultivated and possess as large a population. There is still a good deal of waste land in Alipur and Bhālka, but even in these *tahsils* cultivation is extending rapidly. So much is this the case that it has been found necessary to reserve land near Alipur Duār to provide fodder for the Government elephants, as there is every prospect of the jungle in the neighbourhood disappearing in a few years' time.

Tenancies.

The tenancies in the Western Duars are very similar to those in the permanently settled portion of the district. The year after the annexation of the Duars an enquiry into the position of the *jotdārs* was made by Mr. Tweedie, then Deputy Commissioner. He found that they represented the original reclaimers of the soil, that their rights were hereditary and in fact

passed through many generations, that they could sell the land, and were in the habit of temporarily alienating it by usufructuary mortgage. Their holdings were not liable to sale or forfeiture for arrears of revenue and were lost to them only by voluntary alienation or by desertion. On the other hand, they were liable to pay such revenue as might be fixed and also occasional benevolences. Under the Bhutias, however, all rights were constantly violated, particularly during the period immediately before the annexation of the Duārs. *Jotdārs* occupying the same position are found throughout the Rājshāhi division, predominating in the north, where a large proportion of the land has been recently brought under cultivation, and giving way gradually to the ordinary type of occupancy *raiyat* towards the south. Mr. Nolan, Commissioner of the Rājshāhi division, in a note which he wrote on Mr. Sunder's settlement of the Western Duārs, recorded the following remarks:— 'Beneath the *jotdār*, Mr. Tweedie found three classes—*chukanidārs*, who hold for a fixed term, being more than one year,' *raiyats*, described as tenants by the year at a money rent, and *prajās*, or tenants-at-will, receiving from the *jotdār* the instruments of cultivation and giving to him half the produce. It is a common mistake into which one revenue officer falls after another, to assume that these four classes are always found one above the other on the same land, the last being the actual cultivator, and the other three living on his labours. Most *jotdārs* plough their fields with their own hands, and those who employ "*prajās*" use them only as a small farmer does the labourers he hires. The "*raiyats*" of Mr. Tweedie's report are not said to hold under the *chukanidārs*, from whom they are distinguished only by the length of the term for which they engage—a matter of no importance, when written contracts were unknown. These two classes are now amalgamated under the name of *chukanidārs*, and have been greatly raised in the agricultural scale. It thus appears that under the Bhutias, there were really only two sorts of cultivators—the *jotdārs*, found everywhere in a privileged position directly under Government, and in some places the *chukanidārs*, tenants of the *jotdārs* for a term, or year by year: there were also farm labourers, a landless class, working for hire on a peculiar system. The only change since effected is that the position of the *chukanidārs* has been raised.' Since Mr. Tweedie's time the most important changes which have been made are that *jots* are liable to sale, if the rent due is not paid, and to forfeiture if the *jotdār* fails to comply with the conditions of his lease; the position of the *chukanidārs* has been raised and they now have occupancy rights while their rents cannot be enhanced during the period of settlement. There are very few *dar-chukanidārs* and these are not recognised by Government. In order to prevent sub-infeudation the leases at present in force contain clauses forbidding the creation of any tenure subordinate to the *chukanidār*.

SETTLEMENTS.
The first settlement.

For six years after the cession of the Western Duārs by the Bhutias, the policy followed was to collect all recognised dues without altering the amount. The first settlement took effect from April 1871 and was made after a detailed measurement and classification of all cultivated land; the *jotdars* were permitted to include in their holdings as much waste land as they chose, and in fact appropriated 142,127 acres of waste against 80,395 acres of cultivation. The rents of *chukāntars* were not recorded nor was any attempt made to fix them for the term of settlement, an omission of which Government subsequently expressed disapproval. The settlement was made for a term of seven years, but was allowed to stand for two years more. Meanwhile the *parāna* of South Mānaguri, which had been leased to the Rāikat of Bā kanthpur, reverted to Government and had to be dealt with. At this settlement it was finally decided that the *jotdar* has a vested transferable interest in the land. The rents were considerably increased, the rate for waste being doubled, with the result that the revenue of the *parāna* rose from Rs. 42,706 to Rs. 65,133. The rights of the *chukāntars* were again not recorded.

The second settlement

The second settlement took effect from April 1st, 1880, and was based on the rates in force in South Mānaguri, which had worked successfully for some years. On this occasion the rents payable by *chukāntars* were fixed for the term of settlement, provided that, where they did not exceed the revenue by 50 per cent, they could be "raised to that amount by the Settlement Officer if after detailed enquiry, he found such a proceeding fair." In practice the courts decreed the specified maximum whenever the *jotdars* sought for enhancement. The general result of the settlement was to raise the revenue from Rs. 88,618 to Rs. 1,51,862, but though the rates imposed were not excessive, they were found to press too severely on the inferior *jots*, and remissions amounting to Rs. 17,806 had to be granted in addition to Rs. 5,465 lost by relinquishments and desertions.

The third settlement

The third settlement, known as Mr Sunder's settlement, was made in 1889—95 and was for a period of fifteen years in the four *taheils* of the Western Duārs, and for ten years in Ambāi Fālākata; but subsequent alterations were made in order that the term of settlement should expire in all cases on March 31st, 1908. The *jotdars* had agreed to an increase of three annas in the rupee rental, and it was at first assumed that this was equivalent to the same increase in the rates. It was found, however, that there had been an increase in cultivation more than sufficient to give the additional three annas without any alteration in the rates and irrespective of the gain derived from assessing new *jots*. The actual increase of revenue at this settlement was 60 per cent, of which 12 per cent was on account of the increase in the area under cultivation and 48 per cent was due to the enhancement of the rates. The rents of the *chukāntars* were fixed for the term of the settle-

ment on the principle that they should ordinarily be 50 per cent above the *jotdārī* rates. It was recognised that a *chukānidār* has a heritable and transferable right to his holding subject to the payment of his rent. Mr. Sunder writes in his settlement report "a *chukānidār* cannot be ousted from his holding, except by order of a competent court, notwithstanding the fact that he may not have been twelve years on a *jot*. There is an unwritten law between him and his *jotdār* that he cannot be ousted from his lands so long as he pays his rent. Some *jotdārs* endeavour to get over this by giving a *chukānidār* a lease on plain paper, but they never succeed against the *chukānidār*." At the time of the first settlement no *dar-chukānidārs* could be found, but during this settlement, it was discovered that there were 3,739 such under-tenants holding 18,253 acres of land. Government refused to recognise this newly created under-tenure and the *dar-chukānidārs* were informed that they had no rights whatever.

The fourth settlement of the Western Dnārs was begun in the cold weather of 1907 and is now in progress. There has been a very marked increase in the area under cultivation and much waste land has been reclaimed since the last settlement. Even if the existing rates were maintained there would be a considerable increase in the revenue, but they are so low that they can be enhanced without hardship to the *jotdārs*.

There are three forms of lease in force in the Government estates at the present time. In the case of *māl jots*, i.e., *jots* which were in existence at the time of the second settlement, the lease gives the *jotdār* a heritable right and permits him to transfer the whole or any share in his *jot*; it contains no provision requiring residence and has facilitated the creation of a middleman and absentee class of tenant. When waste land is settled, a preliminary lease for a term of five years is granted. The *jotdār* is bound to reside on or near his *jot* and to bring half the area of it under cultivation within the term of the lease; he can transfer his entire holding but not a portion of it unless the Deputy Commissioner, with the sanction of the Commissioner, permits him to transfer a portion. If he complies with the conditions of his lease, he is entitled to a renewed lease for a term coinciding with the period of the current settlement and thereafter to renewals for the period of each fresh settlement, subject to the right of Government to fix the rent on each occasion. All the leases contain clauses similar to those in the leases of land for tea cultivation, reserving the right of Government to minerals and quarries, and to take up any land required for a public purpose free of cost, subject only to a proportionate reduction in the rent and to payment of the value of any improvements on the land acquired, binding the lessee to keep up boundary marks, etc.

Shortly after the acquisition of the Western Dnārs, Colonel (then Major) Hedāyat Ali, who acted as a Political Officer during the Bhulān war, obtained in February 1906 a rent-free lease for

The fourth settlement.

Leases in force in the Government estates.

SPECIAL SETTLEMENTS Hedāyat Ali's estate.

five years permitting him to bring under cultivation all the unoccupied lands in twenty *taluks*, with a promise that all lands so brought under cultivation would be settled with him at the end of the period. This lease was subsequently cancelled, as were also several other leases, but in May 1868 Colonel Hedāyat Ali was given a lease under which he got exclusive possession of the whole of the unoccupied or waste lands in ten *taluks*, exclusive of the lands in the possession of Government *raiyats*. The arrangements made with Colonel Hedāyat Ali were modified in 1871 and again in 1876. In 1883 settlement of 46,754 acres of land including waste in *parganas* West Madārī, Moraghāt and Lakhipur of the Fālākātā *tahsil* was made with his heirs on the following conditions:—"that all the cleared and cultivated lands shall now be settled with the heirs of the grantee at half rates for 30 years, and that the uncleared and waste shall remain with them for seven years longer free of revenue. Should half the land now uncleared and waste have been brought under cultivation within that period, the entire tract now waste, granted revenue-free for seven years, shall be included in the lease of the cultivated tract now sanctioned for 30 years at half Duārs rates. But should the condition of half clearance not be fulfilled at the expiry of seven years, the uncleared portion shall be forfeited, and the rest shall be included in the estate to be held on half rates from the period of settlement now sanctioned." The lessees failed to fulfil the conditions as to reclamation and, at Mr. Sunder's settlement, 19,191 acres of waste land were resumed, the remaining 22,563 acres being settled with them at half rates. The present revenue of the estate is Rs. 7,897. There are now several shareholders and the estate is not well managed; the tenants are greatly harassed by the various managers and *tahsildārs* who are employed by the different shareholders.

Lands
settled with
Rai Upendra
Nath
Duārdār.

As a reward for his services in the Bhutān war, Rai Upendra Nath Duārdār was granted 2,000 acres of arable land rent-free in perpetuity, and certain other lands, rent-free for life, in the Alipur *tahsil*. The land which was granted rent-free in perpetuity was sold by the Duārdār for Rs. 20,000. After his death the land which had been granted to him rent-free for life was settled with his family at one-fourth rates for a period of 15 years. The rent payable for this land is Rs. 477.

The Jalpes
temple lands.

The rents of 44 *jots* in *pargana* South Māmaguri are devoted to the up-keep of the Jalpes temple. These *jots* were unassessed up to the time of Mr. Sunder's settlement when they were resumed and assessed to revenue. Government has since given up its claim and the tenants pay their rents, amounting to Rs. 2,465 to the Jalpes Temple Committee which uses the money for the purposes of the temple.

Some account has been given in a previous chapter of the Santhal colony. An attempt has been made to found a somewhat

The Moch
and other
lands.

similar colony for persons of the aboriginal races, who were being exploited by their more intelligent neighbours and were in danger of losing their lands. The Mech and Gāro colony is situated in the Alipur *tahsīl*, east of the Torsā river and south of the road leading to Rajābhātkhoā. No special measures were, however, taken to ensure that the tract of country, containing an area of 30 square miles, should be kept only for Meches and Gāros for whom it was reserved; the ordinary leases were issued and there was nothing to prevent the *jotdārs* from transferring their holdings. A special enquiry was made in 1907-08 with a view to discover the actual state of affairs and it was then found that there was not a single Gāro in the colony and that more than half of the *jotdārs* were outsiders, mainly Orāons. There were in fact 218 Mech *jotdārs*, 117 *chukānidārs* and 219 *adhiārs* while 373 *jotdārs*, 88 *chukānidārs* and 254 *adhiārs* belonged to other races. It is proposed to prevent the Meches, who remain in the colony from transferring their *jots* to outsiders, from sub-leasing to *chukānidārs* and from employing *adhiārs* who are not Meches, and to make new settlements, only with Meches. If this is done the land, of which the Meches still retain possession and the waste land which has not yet been settled, can be kept for the people for whom the colony was founded.

CHAPTER IX

RENTS, WAGES AND PRICES.

RENTS.
Permanently
settled
estates.
The
Chaklajāt
estates

The rents paid by the tenants vary in different parts of the district, but are not high either in the *zamindāris*, or in the Government estates. In the Chaklajāt estates there is no uniform schedule of rates in *pargana* Bodā; the rates of rent vary in different *girds* (a local division of a *pargana*), *taluks*, and sometimes even in different *jots*. No fixed scale was adopted in making the *jamabandi* of this *pargana* but the various blocks of land were dealt with independently and according to no settled plan. In the Pātgrām *pargana* the following scale was adopted:—*jotdars*' homestead lands Re. 1-15-6 a *bigha**; under-tenants' homestead lands Re. 1-7-8; garden lands Re. 1-7-8; betelnut, Rs. 3-14-11; bamboo clumps 7 annas and 11 pies; all cultivated lands, lands growing thatching grass and waste lands 4 annas and 9 pies a *ligha*. The rates, which have been accepted during the last few years in making new settlements, are:—*jotdars*' and under-tenants' homestead lands Rs. 2-8 a *bigha*; betelnut Rs. 4; garden lands and lands growing bamboos, sugarcane or tobacco Rs. 2; jute lands, *dojash* Rs. 3 and *ekfash* Re. 1-12; other cultivated lands, 1st class Re. 1-4, 2nd class Re. 1, 3rd class 10 annas, 4th class 4 annas, lands growing thatching grass 12 annas; and waste lands 3 annas a *bigha*. These rates are much higher than those in force in the Government estates, where the highest rate charged for homestead, bamboos or betelnut is Rs. 3 an acre, and for cultivated lands Rs. 2 an acre. The Manager states that the incidence of rent over the whole area of *paryanas* Bodā and Pātgrām is a little more than 5 annas a *bigha*. Practically all the available land in these two *parganas* is under cultivation. No survey and settlement of the Bāikanthpur estate has been made for many years and the rent-roll has not been kept up to date. In a number of cases leases have been granted without measurement for indefinite areas of land, so that many of the tenants have considerably enlarged their original holdings, and still pay only the lump sum agreed upon at the time of settlement. The Manager of the estate, which is under the Court of Wards, states that the following rates of rent are prevalent:—homestead lands Rs. 3 an acre; cultivated lands, 1st class Rs. 2-4, 2nd class Re. 1-12, 3rd class Re. 1-8 and 4th class 12 annas an acre. These rates are not dissimilar to those in force in the Mānaguri *taluk*, but it is doubtful whether they bear much relation to the rents

The
Bāikanthpur
estate.

* The Bengal *bigha*, equal to about one-third of an acre.

actually paid. In the Chaklajāt estates there is no fixed rate of rent payable by *chukānidārs* to *jotidārs*; the parties make whatever arrangements they think fit. In the Bāikanthpur estate the Manager estimates the average rates of rent paid by *chukānidārs* at from Rs. 3 to Rs. 9 an acre, and, near the forest, at from Rs. 2 to Rs. 6 an acre; the rates of rent vary considerably and there is no fixed standard.

It has always been assumed in the Duārs that every field under cultivation has been reclaimed at the tenant's expense from the original jungle and, after the Bhutān war, it was found that the tenants held at a mere jungle rent. This was allowed to continue without change for six years, when the first settlement of the Western Duārs was made, and since then the rents have been gradually enhanced at successive settlements as the country has been reclaimed and land has increased in value. Under the Bhutiās land was left rent-free for five years after the forest had been cleared, and was then assessed at area rates according to the *hāl* or plough, a local measure of about 5 acres. In the Sidh Duār, in the Goālpārā district (there are no records showing the area rates in the other Duārs) the charge was Re 1-14 a *hāl*, or 6 annas an acre, for land growing winter rice, all other classes of soil being granted to residents free of rent. Strangers paid Rs. 2-8 a *hāl*, or 8 annas an acre, for land of every kind. In addition there was a special cess on mustard seed and a local rate of Re. 1 a *hāl* and Rs. 2 a house was levied for religious festivals. Persons who squatted in the jungle paid a *dao*, or knife, tax, and there were also a tax on looms, a fee for irrigation channels, and licenses to trade and ply boats.

The
Government
estates.

Lands in the Western Duārs are divided into two main classes, viz.—*rupit*, which is low land suitable for growing winter rice, and *faringati*, or high land, on which jute, tobacco and *rabī* crops are grown. At the first two settlements no attempt was made to discriminate between different classes of soil but uniform rates for *rupit* and *faringati* were adopted for large areas; the highest rates were assessed in *parganas* Ambārī, Fālākātā, North Māinagurī, South Māinagurī, Chengmārī and Moraghāt; intermediate rates in Lakhipur and West Madārī; and the lowest rates in all the remaining *parganas*. At the settlement of 1892, it was decided to classify, not the fields but the *jots*, in three orders and this was done by *taluks* according as the neighbourhood was in a flourishing condition or otherwise. Rates were then worked out for the three most advanced *parganas*, North Māinagurī, South Māinagurī, and Chengmārī, so as to provide for an enhancement of three annas in the rupee, on the supposition that there had been no extension of cultivation within the *jots* which were settled at the last general settlement, though, as a matter of fact, there had been a very large extension of cultivation within the old *jots*. The difference in the rates now in force and those fixed at the settlement of 1880

are shown in the table in the margin.

Description of land	Rates at settlement of 1880	Rates at settlement of 1892
	Rs a.	Rs a.
Homestead	2 0	3 0
Bamboo		
Garden		
Rupit	1 8	1st class 2 0 2nd " 1 12 3rd " 1 9 4th " 1 8
Faringati	1 2	1st " 1 8 2nd " 1 6 3rd " 1 3 4th " 1 2
Waste	0 3	0 3

The rate for extraordinarily good land, which was meant to be exceptional, was used freely, while that for very bad land was not used at all; one-sixth of the whole area was assessed at the highest rate, one-half at the second, and the remaining one-third at the third rate. In the remaining nine *parganas* all *rupit* and *faringati* lands were placed in a single class and there was no subdivision under the main classes. The settlement of these *parganas*, which were in a comparatively backward state, was made on the basis of the rents paid by the *chukānidārs*, the revenue in every case being two-thirds of the rent. Where the *jotdār* cultivated himself, rates were fixed so as to correspond with the rental paid for similar lands by *chukānidārs* deducting the *jotdār's* allowance. In most of the *parganas* the rates calculated in this manner were found to be generally the same as those sanctioned at the settlement of 1880. In Moraghāt the rate for *rupit* was raised from Re. 1-8 to Re. 1-12, and that for *faringati* from Re. 1-2 to Re. 1-4, and in West Madāri the *rupit* rate was raised from Re. 1-4 to Re. 1-8. The rates per acre paid at present in the Government estates are shown below:—

Name of Tahsil	Rupit	Faringati	Homestead	Dobas	Waste
	Rs a.	Rs a.	Rs a.	Rs. a.	Rs. a.
Mānaguri	{ 1 8 1 9 1 12 2 0	{ 1 2 1 3 1 6 1 8	3 0	{ 1 9 1 12	0 3
			Pargana Moraghāt		
	1 12	1 4	2 0	2 0	0 3
			Pargana Lakhipur		
Fālakātā	{ 1 4 1 8*	0 12	1 12	{ 1 4 1 12*	0 3
			Pargana West Madāri.		
Alipur	1 8	0 12	1 12	1 12	0 3
Bhāika	1 2	0 9	1 8	1 2	0 3
Ambāri	1 2	0 9	1 8	1 2	0 3
Fālakātā	1 8	1 2	2 0	1 8	0 3

* Apply to taluks Bālsunder and Bhutanighāt only.

At the settlement of 1892, 384,896 acres of land were settled with the *jotdārs*, or tenants holding immediately under Government, and this was assessed to pay a revenue of Rs. 3,74,901. The average incidence of revenue to the acre on the whole area is 15 annas and 9 pies or, if calculated on the homestead and cultivated lands only, Re. 1-10. *Chukānidārs* or sub-tenants under the *jotdārs* held 128,288 acres and the rent fixed as payable by them was Rs. 1,69,173; the average incidence of rent to the acre paid by the *chukānidārs* is Re. 1-5 or, if calculated on homestead and cultivated lands only, Re. 1-14. In order to prevent sub-infeudation *chukānidārs* are not permitted to sub-lease their lands. Below the *jotdārs* and the *chukānidārs* are the *adhiārs*; these men receive half the produce of the land which they cultivate.

The rates of rent for tea lands vary in accordance with the rates paid for the highest class of land under ordinary cultivation. In all cases in which a lease has been renewed since April 1st, 1892, the highest rate shown in the statement given above has been charged for each class of land.

In that part of the district of Jalpāiguri, which was formerly a portion of Rangpur, Act X of 1859 with its amending Acts was the rent law up to the 5th November 1898, but, in the Western Duārs, Act XVI of 1869, the Bhutān Duārs Act, was in force up to the 16th October 1895. This Act excluded the ordinary civil courts from the cognisance of suits relating to immovable property, revenue and rent. In the schedule to this Act there were certain rules for the assessment of the Bhutān Duārs with Government revenue and for the preparation of the record of rights to form the basis of such assessment, but no rules were laid down for the guidance of the officers, engaged in the administration of this tract of country, in suits relating to immovable property or rent. There was, therefore, while this Act was in force, no definite rent law for the Western Duārs. Act XVI of 1869 was, however, repealed by Act VII B. C. of 1895 and on the 25th October 1895 Act X of 1859 was extended to the Western Duārs. Subsequently on the 5th November 1898 two notifications were issued extending the Bengal Tenancy Act, VIII of 1885, to the permanently settled portion of the district and partially extending it to the Western Duārs. The extension of the Act to the Western Duārs is subject to the following restrictions:—that none of its provisions, except the section which repeals previous rent enactments, shall apply to any lands heretofore or hereafter granted or leased by Government to any person or company under an instrument in writing for the cultivation of tea or for the reclamation of land under the Arable Waste Land Rules; and that when there is anything in it which is inconsistent with any rights or obligations of a *jotdār*, *chukānidār*, *dar-chukānidār*, *adhiār*, or other tenant of agricultural

land as defined in settlement proceedings heretofore approved by Government, or with the terms of a lease heretofore granted by Government, to a *joldār*, *chukānidār*, *dar-chukānidār*, *adhār*, or other tenant of agricultural land, such rights, obligations, or terms shall be enforceable notwithstanding anything contained in it. The rent law of the Jalpāiguri district is, therefore, the Bengal Tenancy Act, but, in the Western Duārs, it does not apply to lands leased for the cultivation of tea or for the reclamation of waste land. As all previous rent laws have been repealed, it appears that there is no definite rent law for such lands.

A statement of the wages current during the ten years from 1893 to 1902 is given in Table X of the Statistical Appendix. From figures furnished by the Deputy Commissioner's office, it appears that there has been no change in the rates of wages between 1902 and 1908. This is not correct; ordinary coolies will not work in the Jalpāiguri town for four annas a day and it is difficult to get them for five annas or even six annas a day. At the census of 1901 it was found that general unskilled labour formed the small proportion of 2·4 per cent of the population. The demand for labour is very great and there is practically no local supply, nearly all the coolies coming from the United Provinces or from Behār. During the busy season, coolies can earn as much as one rupee a day by working in the jute godowns. In 1906 very high pay was offered for earthwork by the railway authorities, who wished to obtain as much labour as possible in order to repair quickly the damage done by the floods, but very few local coolies were attracted and nearly all the labour had to be imported. The District Board is unable to begin the annual repairs to the roads before the end of November or beginning of December as local labour is not procurable and it is necessary to wait until gangs of coolies, mostly Nūmias, come into the district from Behār. These men work through the cold weather and return to their homes before the rains set in. When unskilled labour is in such request, it is natural that skilled artisans should raise their prices. A Chinese carpenter gets Rs. 2-8 a day in Jalpāiguri, and even then his work is found to be cheaper and better than that of a native workman. *Gharanis* or thatchers work in gangs, and are paid by contract; it is not usual for them to work for daily wages. On the tea-gardens the average rates are Rs. 6 a month for men, Rs. 4-8 to Rs. 5 for women, and Rs. 2-8 to Rs. 3 for children, but in the plucking season, a woman can easily earn Rs. 10 a month and good pluckers sometimes earn as much as Rs. 20; men can earn double pay when the gardens are being hoed. In addition to their pay the coolies get free medical attendance and free houses and fuel. Labour on tea-gardens in the Western Duārs is free and the ordinary coolie does not work more than 18 or 20 days on the average in a month. The land-

less agricultural labourer hardly exists; his place is taken to some extent by the *adhiār*, who cultivates a piece of land and receives half the produce. Want of sufficient agricultural labour has much retarded the extension of cultivation in the Western Duārs.

Prices of food-grains have risen enormously particularly in the last three years. In 1859-60 the best rice could be bought for from 12 to 14 annas a maund and common rice for from 8 to 10 annas a maund; best paddy fetched 4 to 6 annas a maund and common paddy 2 to 4 annas a maund. By 1870 prices had nearly trebled; best rice sold at from Rs. 2-8 to Rs. 3 a maund, and common rice at from Re. 1 to Re. 1-8 a maund. During the ten years from 1893 to 1902 the average price of common rice was 13½ seers for the rupee or about Rs. 3 a maund; in the next three years there was little change, but in 1906 the price rose to 9 seers for the rupee and in 1908 to 7½ seers or over Rs. 5 a maund. Other food-grains have also risen in price, but very few of the people consume them; in 1908 the average price of wheat was 6 seers for the rupee, and of gram 7½ seers. The rise in prices has, on the whole, benefited the majority of the people who depend on agriculture for a living; the cultivators have obtained more money for their produce and the *adhiārs* have not suffered as they are paid in kind. The class which has felt the pinch most is that of persons with small fixed incomes such as the more poorly paid clerks; to assist them an allowance of Rs. 3 a month has been granted to clerks in Government offices, who draw Rs. 30 a month, or less, while menial servants, whose pay is not more than Rs. 15 a month, receive an allowance of Re. 1-8.

Apart from food-grains, the prices of other articles of food are very high, and Jalpāiguri is as expensive a place for a European to live in as Dibrugarh in the Assam Valley. Milk sells at 5 or 6 seers for the rupee, mutton or goat at 8 annas a seer, and Darjeeling mutton at 13 annas a seer; eggs are 2 pice each, and fowls, 6 to 8 annas each; ducks cost 10 annas each, and pigeons, 10 annas a pair. Fish is very expensive; in the rains the only fish procurable is *hilsa* which is packed in ice and brought by train from Sārā Ghāt. In the Western Duārs prices are also high. In the Dāna-Torā sub-district, which occupies a central position in the tea-garden area, milk sells at 2 annas a seer, potatoes at 1½ annas, *dāl* at 2½ annas, and salt at 2 annas; large fowls cost 8 annas each, eggs 2 pice each and kids Rs. 3.

The Jalpāiguri district is rapidly increasing in prosperity; owing to the abundant rainfall and fertile soil famines are unknown; there is a great demand for labour, wages are high, and the people are well-to-do. In the two large zamindari estates rents are low, and though many of the *jots* have passed into the hands of middlemen, such as Mārwarī merchants, pleaders, and

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traders living in the Jalpaiguri town, the cultivators are not badly off. The demand for labour and the waste land still remaining in the district prevent the oppression of the *adhdār*, for, if his employer does not treat him well, he can always take service under another employer or migrate into the Western Duārs and take up land under Government. The increase of population is the best example of the prosperity of the Western Duārs, between 1891 and 1901 the increase amounted to 38.5 per cent. The rise of the tea industry has led to the introduction of numbers of coolies from Chota Nāgpur, the Santhal Parganas and Nepāl, many of whom, after working for some years on the tea-gardens, take up land and settle in the district. The fertile waste lands have attracted cultivators from the neighbouring districts of Rangpur and Dinājpur and from the Cooch Behār State. It is difficult to estimate to what extent the money-lender is succeeding in getting a hold on the land, but he has probably been more successful in the permanently settled portion of the district than in the Government estates. In the Bāikanthipur estate many of the *jots* are held by middlemen, while in the Cooch Behār *zamindari* nearly all the land in the vicinity of Sāldanga has passed into the possession of a Mārwarī firm locally known as the Sāldanga Kayā. At the last settlement of the Western Duārs, it was remarked that the number of resident *jotdārs* was 21,724 and of non-resident *jotdārs* 1,615 or less than 8 per cent; it would be more interesting to know how many *jots* and how much land are held by absentees. The whole *taluk* of Godāirkuti, measuring 2,791 acres, is held by a Mārwarī merchant whose chief place of business is at Cooch Behār in the feudatory State of the same name. In the Kālākātā *tehsil*, where there has been more speculation in land than in other parts of the Western Duārs, about 80 *jots* are held by a man whose father was an ordinary constable and nearly the same number are in possession of the heirs of an up-country man from the Ballia district in the United Provinces who began in Jalpaiguri as a petty contractor. *Jots* vary greatly in size, the largest being the Godāirkuti *taluk* mentioned above; the average holding of a *jotdār* is 38.6 acres and of a *chukanidar* 11.4 acres.

The extent to which *jots* are passing into the hands of outsiders can be seen from the statement below which was made in 1905 for the *Falakata tahsil*:—

Class of people		Number of jots	Area in acres.
Rājbanśi	..	1,638	58,665 23
Muhammādan	...	1,092	40,739 47
Mech	..	381	7,519 52
Jaldhā	.	19	577 16
Grāo	..	17	302 28
Santhāl		2	24 52
Orāon	..	263	6,182 99
Nepālī	.	140	1,990 19
Mārwarī	.	115	6,551 13
Up-countrymen	...	272	14,097 20
Kabulī	..	14	381 41
Assamese	..	18	1,132 65
European	.	7	1,036 19
All others	.	136	5,074 22
Total	..	4,111	173,523 46

From these figures it will be seen that about 15 per cent of the settled area in this *tahsil* is in the hands of Mārwarīs, up-countrymen, Kabulīs, and "other persons" many of whom are Bengālī Babus. The greatest sufferers are the Meches who are improvident and intemperate and who fall an easy prey to the speculator or the money-lender. The *jots* in possession of Muhammādans include the large estates held by the heirs of the late Colonel Hedāyet Ali.

There is a good deal of indebtedness among Palāra (Nepālese) coolies on tea-gardens in the Duārs, though not nearly so much, apparently, as in the Darjeeling district. Mr. H. Bald, Manager of the Chunabati Tea Estate, who came out to this country in January 1882, and has had most of his experience in the Darjeeling district—he came to the Western Duārs about 1900—writes:—
 "There is no doubt about it that the indebtedness of the *sardar* to the money-lender, and the indebtedness of the coolie to the *sardar* are the greatest evils retarding progress amongst the coolies. The debt hangs as a heavy weight round their necks and, as a result, more drink is taken than otherwise would be taken, and this in time leads to gambling and a general want of thrift."

INDEBTED-
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Tea-garden
coolies.

came out to this country in January 1882, and at that time, although coolies earned less money than they do now on tea-gardens, they were undoubtedly better off than they are now. More women wore gold and silver ornaments, the property of their husbands. It is sad to think that the coolies as a class are poorer and less thrifty than formerly, after all the efforts put forth by Government for their benefit. It is so all the same and I put this down to the money-lender, the indebtedness leading to increased drinking and a general want of thrift. The debts press harder on the coolies now than in former days as so many carry debts contracted not only by themselves but by their fathers who are dead and for whom they have become responsible." These remarks apply mainly to Pahāria coolies, who are very extravagant and improvident. Among the Chota Nāgour and Santhāl coolies, who form the bulk of the labour force in the Duār, indebtedness is not a serious evil. The usual rate of interest charged by Mārūāris and shopkeepers is Rs. 5 per cent per mensem on loans of Rs. 100 or more and one anna in the rupee per mensem if the sum borrowed is less than Rs. 100, these rates are equivalent to 60 and 75 per cent per annum. The money-lender seldom fails to get his money back as he secures himself against loss in every way possible. He is generally in no hurry to get the principal paid up and tells his debtor not to worry about it but to go on paying the interest. If the man has plenty of cattle and is well-to-do, he often encourages him not to pay the interest for a time; the interest due is then added to the principal and the victim executes a new bond in which he acknowledges receipt of the whole sum as a loan with the result that he has to pay compound interest on the original sum borrowed and his debt mounts up faster than ever. When the debtor gets old or takes to drink, the money-lender sets to work to squeeze him, depriving him gradually of all his cattle, his wife's golden ornaments and other property. As a last resort, when he can get no more out of his debtor, the money-lender threatens to file a suit against him in the Civil Court and this threat always has the desired result if the debtor can by any possibility get the money from his relations, who are generally willing to help rather than see one of their people sent to prison. In some cases the creditor secures himself by getting the debtor's wife or son to sign a paper stating that, if the husband or father fails through death or any other cause to pay the debt, they will be responsible for it.

Outside the tea-garden area the cultivators are not as a rule heavily in debt and seldom owe more than they can pay off after selling next season's crops. Standing crops are not mortgaged as is so often the case in Bebār, and the circumstances of the people are shown by the fact that they are able to hold up their jute, when they think that they will get better prices by doing so, and to refuse to sell rice for export, when they run the risk of falling short themselves if they

part with it. From enquiries made, in 1905, the rates of interest in the Māinaguri and Alipur *tahsils* vary from 18 to 37½ per cent per annum and in the Fālākātā *tahsīl* from 12 to 75 per cent, the average rate per annum being 36 per cent. It is doubtful if a cultivator is ever able to borrow at such a low rate of interest as 12 per cent, and it is probable that he has often to pay more than 37½ per cent. In the Government estates the tenantry are most in debt in the *taluks* bordering on the Darjeeling larai. Out of 227 *jots* comprised in the *taluks* of Totgāon, Udlahāri and Sāoga Fulbāri in the Māinaguri *tahsīl*, 102 or 45 per cent were transferred in 1904-05 and the *tahsildār* reported that many of them had passed into the hands of professional money-lenders. During the same year the *tahsildār* of Fālākātā gave a list of 71 *jots*, covering 1,882 acres, which had been sold to known money-lenders, the sellers being chiefly Meches. In some cases the sellers sink to the position of *adhīdārs* and are at the mercy of the new *jotdārs*, who can turn them out at any time, but Meches generally leave the land and go elsewhere as they do not like living with people of other races. *Chukānūdārs* appear to mortgage and sell their holdings freely to money-lenders.

The chief reason which maintains the rate of interest at such a high pitch seems to be that the money-lending business is almost entirely in the hands of the Mārṇāris, who are few in number and form a close ring. It has been suggested that legislative action should be taken to limit the rate of interest which can be recovered by civil suits. This might have some effect, but the Mārṇāri would probably evade the law by getting his debtor to sign a bond in which he admitted receipt of a larger sum than he had actually borrowed, and the court would find considerable difficulty in ascertaining the amount which had been really lent.

Remedial
measures

In the Government estates much might be done by restricting the right of the *jotdār* to transfer his holding; if the money-lender could not get possession of the land, he would not lend such large sums and the cultivator would not be able to borrow as recklessly as he sometimes does now.